

Foreword

This resource material was developed to provide teachers with examples of graded assignments for reference and is by no means exhaustive. Teachers are advised to adapt the materials according to the diverse learning needs of students if deemed necessary.

Graded Assignment 5: Marginal and Absorption Costing
Elementary Level – Question Paper

Peter Company commenced business on 1 January 2019 to produce a special type of headphone, 'B20'. The estimated fixed production overheads were \$160,000 and would be allocated on the basis of production units. The estimated production and sales units for the year were 20,000. The actual production and actual sales units for 2019 were 24,000 units and 23,000 units respectively. Other actual data for 2019 was as follows:

	<u>\$ per unit</u>
Selling price	28
Direct materials	5
Direct labour	4
Variable production overheads	3
Variable selling overheads	1
	\$
Fixed production overheads	108,000
Fixed selling overheads	9,000
Fixed administrative overheads	17,000

REQUIRED:

- (a) Prepare an income statement for the year ended 31 December 2019 using absorption costing. (8 marks)
- (b) Prepare an income statement for the year ended 31 December 2019 using marginal costing. (7 marks)
- (c) Based on your answers in (a) and (b) above, explain the reason for the difference in the value of ending inventory under the two costing methods and discuss the impact of this difference on the reported net profits in 2019. (3 marks)
- (Total: 18 marks)

Graded Assignment 5: Marginal and Absorption Costing
Elementary Level – Student Worksheet

(a) Peter Company
Income Statement for the year ended 31 December 2019 (under absorption costing)

	\$'000	\$'000
Sales (<i>Selling price × Actual sales units</i>) (\$ _____ × _____ units)		
Less: <u>Cost of goods sold</u>		
<div style="color: red; font-weight: bold; font-size: small;">*Cost per unit × Actual production units</div>	Direct materials*(\$ _____ × _____ units) Add: Direct labour* (\$ _____ × _____ units) Add: Variable production overheads* (\$ _____ × _____ units)	
Add: Fixed production overheads absorbed (Working 1)		_____
Less: Closing inventory (Working 2)		_____
_____ : _____-absorbed production overheads (Working 3)		_____
Gross profit		
Less: Selling overheads (Working 4)		
Administrative overheads		
Net profit		_____

Working 1

Under absorption costing, predetermined fixed production overhead absorption rate is adopted to allocate the fixed production overheads to the production:

Predetermined fixed production overhead absorption rate

= Estimated fixed production overheads ÷ Estimated production units

= \$ _____ ÷ _____ units = \$ _____ per unit

Fixed production overheads absorbed

= Predetermined fixed production overhead absorption rate × Actual production units

= \$ _____ per unit × _____ units = \$ _____

Working 2

Closing inventory value = Product cost per unit × Number of units in closing inventory

Product cost per unit under absorption costing

= Direct materials + Direct labour + Variable production overheads + Fixed production overheads

= \$ _____ + \$ _____ + \$ _____ + \$ _____

= \$ _____

Fixed production overheads per unit is equal to the predetermined fixed production overhead absorption rate

Number of units in closing inventory

= Production units - Sales units

= _____ units - _____ units = _____ units

Closing inventory value = \$ _____ × _____ units = \$ _____

Working 3

As the overheads absorbed is an estimated amount, adjustments should be made in the cost of goods sold for any over/under absorption of fixed production overheads (FPOH):

If Absorbed FPOH > Actual FPOH => Over-absorbed FPOH

If Absorbed FPOH < Actual FPOH => Under-absorbed FPOH

If FPOH is over-absorbed, the cost of goods sold will be overstated. Over-absorbed FPOH should be deducted from the cost of goods sold.

If FPOH is under-absorbed, the cost of goods sold will be understated. Under-absorbed FPOH should be added to the cost of goods sold

	\$
Actual fixed production overheads	
Less: Absorbed fixed production overheads (from Working 1)	
(Over / Under) [#] -absorbed fixed production overheads	

Circle the correct answer

Working 4

Selling overheads = Variable selling overheads + Fixed selling overheads

= (Cost per unit x Actual sales units) + Fixed selling overheads

= (\$ _____ x _____ units) + \$ _____

= \$ _____

(b) Peter Company
Income Statement for the year ended 31 December 2019 (under marginal costing)

	\$'000	\$'000
Sales (<i>Selling price × Actual sales units</i>) (\$ _____ × _____ units)		
Less: <u>Variable cost of goods sold</u>		
Cost per unit × Actual production units	Direct materials(\$ _____ × _____ units)	
	Add: Direct labour* (\$ _____ × _____ units)	
	Add: Variable production overheads*	
	(\$ _____ × _____ units)	_____
	Less: Closing inventory (Working 1)	_____
	Less: Variable selling overheads	
	<i>(Cost per unit x Actual sales units)</i>	
	(\$ _____ × _____ units)	_____
	Contribution margin	_____
	Less: Fixed production overheads (<i>Actual figure</i>)	
	Fixed selling overheads	
	Fixed administrative overheads	
	Net profit	_____

Working 1

Closing inventory value = Product cost per unit × Number of units in closing inventory

Product cost per unit under marginal costing

= Direct materials + Direct labour + Variable production overheads

= \$ _____ + \$ _____ + \$ _____

= \$ _____

Number of units in closing inventory

= Production units - Sales units

= _____ units - _____ units = _____ units

Closing inventory value = \$ _____ × _____ units = \$ _____

(c) Fill in the following blanks with the appropriate word given below:

period fixed expensed higher product

Absorption and marginal costing differ in how they handle (a) _____ production overheads in arriving product cost.

Under absorption costing, fixed production overheads are treated as (b) _____ cost and assets until the products are sold.

Under marginal costing, fixed production overheads are treated as (c) _____ cost and are (d) _____ on the current period's income statement.

Therefore, the net profit reported under the absorption costing was (e) _____ than the net profit under the marginal costing by \$8,000 (\$8 × 1,000 units).

Graded Assignment 5: Marginal and Absorption Costing
Elementary Level – Suggested Solution and Explanatory Notes

(a) Peter Company

Income Statement for the year ended 31 December 2019 (under absorption costing)

	\$'000	\$'000
Sales (<i>Selling price × Actual sales units</i>) (\$28 × 23,000 units)		644
Less: <u>Cost of goods sold</u>		
Direct materials (\$5 × 24,000)	120	
Add: Direct labour (\$4 × 24,000)	96	
Add: Variable production overheads (\$3 × 24,000)	72	
Add: Fixed production overheads absorbed (Working 1)	192	
	480	
Less: Closing inventory (Working 2)	20	
	460	
Less: Over-absorbed production overheads (Working 3)	84	376
Gross profit		268
Less: Selling overheads (Working 4)	32	
Administrative overheads	17	49
Net profit		219

Working 1

Predetermined fixed production overhead absorption rate
= \$ 160,000 ÷ 20,000 units = \$ 8 per unit

Fixed production overheads absorbed
= \$ 8 per unit × 24,000 units = \$ 192,000

Working 2

Product cost per unit under absorption costing
= \$5 + \$4 + \$3 + \$8
= \$20

Number of units in closing inventory
= 24,000 units - 23,000 units = 1,000 units

Closing inventory value = \$20 × 1,000 units = \$20,000

Working 3

	\$
Actual fixed production overheads	108,000
Less: Absorbed fixed production overheads (from Working 1)	192,000
(Over / Under)# -absorbed fixed production overheads	84,000

Working 4

Selling overheads = $(\$1 \times 23,000 \text{ units}) + \$9,000 = \$32,000$

(b) Peter Company
Income Statement for the year ended 31 December 2019 (under marginal costing)

	\$'000	\$'000
Sales $(\$28 \times 23,000)$		644
Less: <u>Variable cost of goods sold</u>		
Direct materials $(\$5 \times 24,000)$	120	
Add: Direct labour $(\$4 \times 24,000)$	96	
Add: Variable production overheads $(\$3 \times 24,000)$	72	
	288	
Less: Closing inventory (Working 1)	12	276
		368
Less: Variable selling overheads $(\$1 \times 23,000)$		23
Contribution margin		345
Less: Fixed production overheads	108	
Fixed selling overheads	9	
Fixed administrative overheads	17	134
Net profit		211

Working 1

Product cost per unit under marginal costing
= $\$5 + \$4 + \$3 = \12

Number of units in closing inventory
= $24,000 \text{ units} - 23,000 \text{ units} = 1,000 \text{ units}$

Closing inventory value = $\$12 \times 1,000 \text{ units} = \$12,000$

- (c) Absorption and marginal costing differ in how they handle (a) **fixed** production overheads in arriving product cost. Under absorption costing, fixed production overheads are treated as (b) **product** cost and assets until the products are sold. Under marginal costing, fixed production overheads are treated as (c) **period** cost and are (d) **expensed** on the current period's income statement. Therefore, the net profit reported under the absorption costing was (e) **higher** than the net profit under the marginal costing by \$8,000 ($\$8 \times 1,000$ units)

Points to be noted:

Definitions:

1. Product costs - They are those production costs, both direct and indirect, of producing a product.
2. Period costs - They are those costs other than product costs.

Important formulas:

Absorption Costing

1. Product cost under absorption costing = Direct materials + Direct labour + Direct expenses + Variable production overheads + Fixed production overheads
2. Net profit under absorption costing = Sales – Costs of goods sold – Expenses
= Sales – Production costs – Non-production costs

Marginal Costing

1. Product cost under marginal costing = Direct materials + Direct labour + Direct expenses + Variable production overheads
2. Contribution margin = Sales – Variable costs (both production and non-production costs)
3. Net profit under marginal costing = Sales – Variable costs – Fixed costs
= Contribution margin – Fixed costs

Steps of calculating over/under-absorption of fixed production overhead

1. Calculate the predetermined fixed production overhead absorption rate:
Estimated fixed production overheads (FPOH) \div Estimated production units
2. Calculate absorbed FPOH
Predetermined fixed production overhead absorption rate \times actual production units
3. Reconcile actual FPOH incurred with absorbed FPOH
If Absorbed FPOH $>$ Actual FPOH = Over-absorbed FPOH \Rightarrow deduct from cost of goods sold
If Absorbed FPOH $<$ Actual FPOH = Under-absorbed FPOH \Rightarrow add to cost of goods sold

Common mistakes:

1. Fail to compute the predetermined fixed production overhead absorption rate and overheads absorbed.
2. Mistakenly treat the overheads absorbed as actual overheads without incorporating over/under absorption in the calculation of cost of goods sold.
3. Cannot identify all the production costs to compute the gross profit.
4. Wrong classification of product cost and period cost.
5. Mix up the calculations under absorption costing and marginal costing. For instance, fail to differentiate between gross profit and contribution margin.

Graded Assignment 5: Marginal and Absorption Costing
Standard Level – Question Paper

Peter Company commenced business on 1 January 2019 to produce a special type of headphone, 'B20'. The estimated fixed production overheads were \$160,000 and would be allocated on the basis of production units. The estimated production and sales units for the year were 20,000. The actual production and actual sales units for 2019 were 24,000 units and 23,000 units respectively. Other actual data for 2019 was as follows:

	<u>\$ per unit</u>
Selling price	28
Direct materials	5
Direct labour	4
Variable production overheads	3
Variable selling overheads	1
	\$
Fixed production overheads	108,000
Fixed selling overheads	9,000
Fixed administrative overheads	17,000

REQUIRED:

- (a) Prepare an income statement for the year ended 31 December 2019 using absorption costing. (8 marks)
- (b) Prepare an income statement for the year ended 31 December 2019 using marginal costing. (7 marks)
- (c) Based on your answers in (a) and (b) above, explain the reason for the difference in the value of ending inventory under the two costing methods and discuss the impact of this difference on the reported net profits in 2019. (3 marks)
- (Total: 18 marks)

Graded Assignment 5: Marginal and Absorption Costing
Standard Level – Student Worksheet

- (a) **Hint 1: Calculate the fixed production overheads absorbed using the predetermined overhead absorption rate**

Predetermined overhead absorption rate

= Estimated fixed production overheads (FPOH) ÷ Estimated production units

Fixed production overheads absorbed

= Predetermined overhead absorption rate × actual production units

Hint 2: As the overheads absorbed is an estimated amount, adjustments should be made in the cost of goods sold for any over/under absorption of fixed production overheads (FPOH):

If Absorbed FPOH > Actual FPOH => _____-absorbed FPOH

=> _____ from costs of goods sold

If Absorbed FPOH < Actual FPOH => _____-absorbed FPOH

=> _____ to costs of goods sold

Hint 3: Classify the costs as product cost or period cost (put a tick in the following table)

	Product cost	Period cost
1. Direct materials		
2. Direct labour		
3. Variable production overheads		
4. Variable selling overheads		
5. Fixed production overheads		
6. Fixed selling overheads		
7. Fixed administrative overheads		

Peter Company
Income Statement for the year ended 31 December 2019 (under absorption costing)

\$'000 \$'000

Less: Cost of goods sold

Add: Fixed production overheads absorbed

(\$ _____ ÷ _____ units × _____ units)

Less: Closing inventory

[\$(_____ + _____ + _____ + _____) × (_____ units -
 _____ units)]

_____ : _____ -absorbed production overheads

(\$ _____ - \$ _____)

Gross profit

Less: Selling overheads

[(\$ _____ × _____ units) + \$ _____]

Net profit

(b)

Hint 1: Calculate the total contribution margin

= [Selling price - Variable costs per unit (both production and non-production)] × Actual sales unit

= (\$ _____ - \$ _____ - \$ _____ - \$ _____ - \$ _____) × _____ units
 = \$ _____

Hint 2: Classify the costs as product cost or period cost (put a tick in the following table)

	Product cost	Period cost
1. Direct materials		
2. Direct labour		
3. Variable production overheads		
4. Variable selling overheads		
5. Fixed production overheads		
6. Fixed selling overheads		
7. Fixed administrative overheads		

Peter Company
 Income Statement for the year ended 31 December 2019 (under marginal costing)

\$'000 \$'000

Less: Variable cost of goods sold

Less: Closing inventory

[\$(_____ + _____ + _____) × (_____ units - _____ units)]

Less:

Contribution margin _____

Less:

Net profit _____

=====

(c)

Graded Assignment 5: Marginal and Absorption Costing
Standard Level – Suggested Solution and Explanatory Notes

(a) Peter Company

Income Statement for the year ended 31 December 2019 (under absorption costing)

	\$'000	\$'000
Sales ($\$28 \times 23,000$)		644
Less: <u>Cost of goods sold</u>		
Direct materials ($\$5 \times 24,000$)	120	
Add: Direct labour ($\$4 \times 24,000$)	96	
Add: Variable production overheads ($\$3 \times 24,000$)	72	
Add: Fixed production overheads absorbed ($\$160,000 \div 20,000 \text{ units} \times 24,000 \text{ units}$)	192	
	480	
Less: Closing inventory [$(\$5 + 4 + 3 + 8) \times (24,000 - 23,000)$]	20	
	460	
Less: Over-absorbed production overheads ($\$192,000 - \$108,000$)	84	376
Gross profit		268
Less: Selling overheads ($\$1 \times 23,000 \text{ units} + \$9,000$)	32	
Administrative overheads	17	49
Net profit		219

Explanatory notes

(1) Steps to calculate over / under - absorbed fixed production overheads (FPOH)

Step 1: Calculate absorbed FPOH:

Predetermined FPOH absorption rate \times Actual production units

Step 2: Reconcile actual FPOH incurred with absorbed FPOH

If Absorbed FPOH $>$ Actual FPOH \Rightarrow **Over-absorbed FPOH**
 \Rightarrow Deduct from cost of goods sold

If Absorbed FPOH $<$ Actual FPOH \Rightarrow **Under-absorbed FPOH**
 \Rightarrow Add to cost of goods sold

(2) Cost classification under absorption costing

	Product cost	Period cost
1. Direct materials	✓	
2. Direct labour	✓	
3. Variable production overheads	✓	
4. Variable selling overheads		✓
5. Fixed production overheads	✓	
6. Fixed selling overheads		✓
7. Fixed administrative overheads		✓

Product cost under absorption costing includes all production costs while period cost includes all non-production costs.

Peter Company

(b) Income Statement for the year ended 31 December 2019 (under marginal costing)

	\$'000	\$'000
Sales ($\$28 \times 23,000$)		644
Less: <u>Variable cost of goods sold</u>		
Direct materials ($\$5 \times 24,000$)	120	
Add: Direct labour ($\$4 \times 24,000$)	96	
Add: Variable production overheads ($\$3 \times 24,000$)	72	
	288	
Less: Closing inventory	12	276
[($\$5 + \$4 + \$3$) \times ($24,000 - 23,000$)]		368
Less: Variable selling overheads ($\$1 \times 23,000$)		23
Contribution margin		345
Less: Fixed production overheads	108	
Fixed selling overheads	9	
Fixed administrative overheads	17	134
Net profit		211

Explanatory notes

(1) Contribution margin is the difference between sales and all the variable costs

= [Selling price - Variable costs per unit (both production and non-production)] × Actual sales units

= (\$ 28 - \$ 5 - \$ 4 - \$ 3 - \$ 1) × 23,000 units

= \$345,000

(2) Cost Classification under marginal costing

	Product cost	Period cost
1. Direct materials	✓	
2. Direct labour	✓	
3. Variable production overheads	✓	
4. Variable selling overheads		✓
5. Fixed production overheads		✓
6. Fixed selling overheads		✓
7. Fixed administrative overheads		✓

Product cost under marginal costing includes only variable production costs while fixed production costs are treated as period cost which are expensed on the income statement for the current period.

- (c) Absorption and marginal costing differ in how they handle fixed production overheads in arriving product cost. Under absorption costing, fixed production overheads are treated as product cost and asset until the products are sold. Under marginal costing, fixed production overheads are treated as period cost and are expensed on the current period's income statement. Therefore, the net profit reported under the absorption costing was higher than the net profit under the marginal costing by \$8,000 (\$8 × 1,000 units)

Points to be noted:

Definitions:

- Product costs - They are those production costs, both direct and indirect, of producing a product.
- Period costs - They are the costs other than product costs.

Differences Between Absorption Costing and Marginal Costing		
	<u>Absorption Costing</u>	<u>Marginal Costing</u>
Purposes	External reporting	Short-term decision making (e.g. cost control, product pricing, production planning)

Presentation Format	<u>Gross profit</u> = Sales – Total production costs <u>Net profit</u> = Gross profit – Total non-production costs	<u>Contribution margin</u> = Sales – Total variable costs <u>Net profit</u> = Contribution margin – Total fixed costs
Product Costs	Direct materials (DM) + Direct labour (DL) + Direct expenses (DE) + Variable production overheads (VPOH) + Fixed production overheads (FPOH)	Direct materials (DM) + Direct labour (DL) + Direct expenses (DE) + Variable production overheads (VPOH)
Period Costs	Selling expenses + Administrative expenses	Fixed production overheads + Selling expenses + Administrative expenses
Inventory Valuation	DM + DL + DE + VPOH + FPOH	DM + DL + DE + VPOH

Common mistakes:

1. Fail to include the absorbed fixed production overheads in calculating the production costs under absorption costing.
2. Cannot identify all the variable costs (e.g. selling expenses) to compute the correct contribution margin.
3. Fail to differentiate estimated fixed overheads, fixed overhead absorbed and actual fixed overheads.
4. Cannot differentiate between gross profit and contribution margin.
5. Mistakenly treat variable selling expenses as product cost under marginal costing.

Graded Assignment 5: Marginal and Absorption Costing
Advanced Level – Question Paper

Peter Company commenced business on 1 January 2019 to produce a special type of headphone, 'B20'. The estimated fixed production overheads were \$160,000 and would be allocated on the basis of production units. The estimated production and sales units for the year were 20,000. The estimated figures were given below:

	\$
Sales	560,000
Direct materials	100,000
Direct labour	80,000
Variable production overheads	60,000
Variable selling overheads	20,000
Fixed selling overheads	9,000
Fixed administrative overheads	17,000

During the year, 24,000 units were produced and 23,000 units were sold at the estimated selling price. Actual unit variable costs were as same as the estimated costs while the actual fixed production overheads amounting \$108,000 were incurred.

REQUIRED:

- (a) Prepare an income statement for the year ended 31 December 2019 using absorption costing. (8 marks)
- (b) Prepare an income statement for the year ended 31 December 2019 using marginal costing. (7 marks)
- (c) Based on your answers in (a) and (b) above, explain the reason for the difference in the value of ending inventory under the two costing methods and discuss the impact of this difference on the reported net profits in 2019. (3 marks)
(Total: 18 marks)

Challenging question

- (d) Accidentally the accountant found that there were 600 units of 'B20' which had been outsourced to an external manufacturer at a cost of \$20 each missing on the stock sheet. Assume that the company decided to use marginal costing method to determine its net income and weighted average cost method for the valuation of inventory. Calculate the unit cost of ending inventory on 31 December 2019. (3 marks)

Graded Assignment 5: Marginal and Absorption Costing
Advanced Level – Student Worksheet

(a)

(b)

(c)

Challenging question

(d)

Graded Assignment 5: Marginal and Absorption Costing
Advanced Level – Suggested Solution and Explanatory Notes

(a) Peter Company

Income Statement for the year ended 31 December 2019 (under absorption costing)

	\$'000	\$'000
Sales ($\$560,000 \div 20,000 \times 23,000$)		644
Less: <u>Cost of goods sold</u>		
Direct materials ($\$100,000 \div 20,000 \times 24,000$)	120	
Add: Direct labour ($\$80,000 \div 20,000 \times 24,000$)	96	
Add: Variable production overheads ($\$60,000 \div 20,000 \times 24,000$)	72	
Add: Fixed production overheads absorbed ($\$160,000 \div 20,000 \times 24,000$)	192	
	480	
Less: Closing inventory [$\$480,000 \div 24,000 \times (24,000 - 23,000)$]	20	
	460	
Less: Over-absorbed production overheads ($\$192,000 - \$108,000$)	84	376
Gross profit		268
Less: Selling overheads ($\$9,000 + \$20,000 \div 20,000 \times 23,000$)	32	
Administrative overheads	17	49
Net profit		219

(b) Peter Company

Income Statement for the year ended 31 December 2019 (under marginal costing)

	\$'000	\$'000
Sales ($\$560,000 \div 20,000 \times 23,000$)		644
Less: <u>Variable cost of goods sold</u>		
Direct materials ($\$100,000 \div 20,000 \times 24,000$)	120	
Add: Direct labour ($\$80,000 \div 20,000 \times 24,000$)	96	
Add: Variable production overheads ($\$60,000 \div 20,000 \times 24,000$)	72	
	288	
Less: Closing inventory [$\$288,000 \div 24,000 \times (24,000 - 23,000)$]	12	276
		368
Less: Variable selling overheads ($\$20,000 \div 20,000 \times 23,000$)		23
Contribution margin		345
Less: Fixed production overheads	108	
Fixed selling overheads	9	
Fixed administrative overheads	17	134
Net profit		211

- (c) Absorption and marginal costing differ in how they handle fixed production overheads in arriving product cost. Under absorption costing, fixed production overheads are treated as product cost and asset until the products are sold. Under marginal costing, fixed production overheads are treated as period cost and are expensed on the current period's income statement. Therefore, the net profit reported under the absorption costing was higher than the net profit under the marginal costing by \$8,000 ($\$8 \times 1,000$ units)

Challenging question

- (d) Unit product cost under marginal costing = $(\$100,000 + \$80,000 + \$60,000) \div 20,000 = \12

$$\text{Unit cost of ending inventory} = (\$20 \times 600 + \$12 \times 1,000) \div (1,000 + 600) = \underline{\$15}$$

Points to be noted:

1. Comparison between product cost and period cost

	Product cost	Period cost
Definition	They are those production costs, both direct and indirect, of producing a product	They are the costs other than product costs
Accounting treatment	<ul style="list-style-type: none"> ➤ Included in the inventory valuation ➤ Charged to cost of goods sold on the income statement only when the goods are sold 	<ul style="list-style-type: none"> ➤ Not included in the inventory valuation ➤ Expensed on the income statement once they are incurred
Classification under absorption costing	<ul style="list-style-type: none"> ➤ Direct materials ➤ Direct labour ➤ Direct expenses ➤ Variable production overheads ➤ Fixed production overheads 	<ul style="list-style-type: none"> ➤ Selling overheads ➤ Administrative overheads
Classification under marginal costing	<ul style="list-style-type: none"> ➤ Direct materials ➤ Direct labour ➤ Direct expenses ➤ Variable production overheads 	<ul style="list-style-type: none"> ➤ Selling overheads ➤ Administrative overheads ➤ Fixed production overheads

2. Differences Between Absorption Costing and Marginal Costing

	<u>Absorption costing</u>	<u>Marginal costing</u>
Purposes	External reporting	Short-term decision making (e.g. cost control, product pricing, production planning)
Presentation Format	<u>Gross profit</u> = Sales – Total production costs <u>Net profit</u> = Gross profit – Total non-production costs	<u>Contribution margin</u> = Sales – Total variable costs <u>Net profit</u> = Contribution margin – Total fixed costs

3. Relationship between change in inventory level and profits under two costing methods

Relation between production and sales (Units)	Effect on inventories (Units)	Relation between the Net Incomes (\$)
1. Production > Sales	Inventories increase	Absorption costing > Marginal costing*
2. Production < Sales	Inventories decrease	Absorption costing < Marginal costing**
3. Production = Sales	No change in inventories	Absorption costing = Marginal costing

* Net income is higher under absorption costing because part of fixed production overheads is absorbed in the ending inventory and deferred to be expensed as inventories increase.

** Net income is lower under absorption costing because the fixed production overheads are released from the beginning inventory brought forward from the previous period and expensed in the income statement for the current period as inventories decrease.

4. Steps to calculate over / under absorbed Fixed Production Overhead (FPOH):

Step 1: Calculate predetermined fixed production overhead absorption rate =
Estimated fixed production overheads ÷ estimated production units

Step 2: Calculate absorbed FPOH =
Predetermined fixed production overhead absorption rate × actual production units

Step 3: Reconcile actual FPOH incurred with absorbed FPOH

➤ Case (1): Absorbed FPOH > Actual FPOH = Over-absorbed FPOH

➤ Case (2): Absorbed FPOH < Actual FPOH = Under-absorbed FPOH

Treatment for over / under – absorbed FPOH:

Case 1: If FPOH is over-absorbed, the cost of goods sold will be overstated. Over-absorbed FPOH should be deducted from the cost of goods sold.

Case 2: If FPOH is under-absorbed, the cost of goods sold will be understated. Under-absorbed FPOH should be added to the cost of goods sold.

Common mistakes:

1. Fail to work out the over-absorbed fixed production overheads due to wrongly comparing the absorbed overheads with the estimated overheads instead of actual overheads.
2. Fail to adopt weighted average cost method to calculate the unit cost of ending inventory.
3. Fail to elaborate how the difference on the treatment of fixed production overheads between the marginal and absorption costing methods affect the reported net profits.

Graded Assignment 5: Marginal and Absorption Costing
Marking Scheme

(a) Peter Company

Income Statement for the year ended 31 December 2019 (under absorption costing)

	\$'000	\$'000	
Sales		644	(0.5)
Less: <u>Cost of goods sold</u>			
Direct materials	120		(0.5)
Add: Direct labour	96		(0.5)
Add: Variable production overheads	72		(0.5)
Add: Fixed production overheads absorbed	192		(1)
	480		
Less: Closing inventory [$\$20^* \times (24,000 - 23,000)$]	20		(1)
	460		
Less: Over-absorbed production overheads (\$192,000 - \$108,000)	84	376	(1)
Gross profit		268	(0.5)
Less: Selling overheads	32		(1)
Administrative overheads	17	49	(0.5)
Net profit		219	(1)

* Product cost per unit under absorption costing
= DM + DL + VPOH + FPOH = \$5 + \$4 + \$3 + \$8 = \$20

(Total: 8 marks)

(b) Peter Company

Income Statement for the year ended 31 December 2019 (under marginal costing)

	\$'000	\$'000	
Sales		644	(0.5)
Less: <u>Variable cost of goods sold</u>			
Direct materials	120		(0.5)
Add: Direct labour	96		(0.5)
Add: Variable production overheads	72		(0.5)
	288		
Less: Closing inventory [$\$12^* \times (24,000 - 23,000)$]	12	276	(1)
		368	
Less: Variable selling overheads		23	(0.5)
Contribution margin		345	(1)
Less: Fixed production overheads	108		(0.5)
Fixed selling overheads	9		(0.5)
Fixed administrative overheads	17	134	(0.5)
Net profit		211	(1)

* Product cost per unit under marginal costing
= DM + DL + VPOH = \$5 + \$4 + \$3 = \$12

(Total: 7 marks)

- (c) Absorption and marginal costing differ in how they handle fixed production overheads in arriving product cost. (1) Under absorption costing, fixed production overheads are treated as product cost and asset until the products are sold. Under marginal costing, fixed production overheads are treated as period cost and are expensed on the current period's income statement. (1) Therefore, the net profit reported under the absorption costing was higher than the net profit under the marginal costing by \$8,000 ($\$8 \times 1,000$ units). (1)

(Total: 3 marks)

Challenging question

(d)

Unit product cost under marginal costing = $(\$100,000 + \$80,000 + \$60,000) \div 20,000 = \12 (2)

Unit cost of ending inventory = $(\$20 \times 600 + \$12 \times 1,000) \div (1,000 + 600) = \15 (1)

(Total: 3 marks)