Managerial Accounting

GMBA 2015

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Question 1

The following information has been taken from the accounting records of **Metalex, Ltd.**:

Sales	1,350,000 €
Selling expenses	108,000 €
Purchases of raw materials (650,000 units)	325,000 €
Direct labour cost	341,000 €
Utilities (factory)	80,000 €
Depreciation (factory)	115,000 €
Insurance (factory)	10,000 €
Maintenance (factory)	55,000 €
Indirect labour	100,000 €
Administrative expenses	85,500 €
Financial expenses	57,500 €

Stocks	**1 January**	**31 December**
Raw materials	50,000 units x 0.45 €	80,000 units
Work in process	26,500 €	27,500 €
Finish goods	150,000 units x 2 €	130,000 units

Assuming production was 500,000 units and the company uses the LIFO method for valuing movement of materials and finish goods:

1. Prepare a schedule of cost of goods manufactured;
2. Compute the cost of goods sold;
3. Prepare the profit and loss account.

Question 2

Last year, **Southern Sporting Company** manufactured 100,000 units and reported the following information (in Euros):

Sandpaper	32,000	Leasing costs — plant	384,000
Materials handling	320,000	Depreciation — equipment	224,000
Coolants & lubricants	22,400	Property taxes — equipment	32,000
Indirect manufacturing labour	275,200	Fire insurance — equipment	20,000
Direct manufacturing labour	2,176,000	Direct material purchases	3,136,000
Direct materials, 1/Jan	384,000	Financial costs	25,000
Direct materials, 31/Dec	275,200	Sales revenue	12,800,000
Finished goods, 1/Jan	672,000	Sales commissions	640,000
Finished goods, 31/Dec	1,280,000	Sales salaries	572,000
Work-in-process, 1/Jan	96,000	Advertising costs	480,000
Work-in-process, 31/Dec	64,000	Administration costs	800,000

Required:

1. What is cost of goods manufactured?
2. Prepare the profit and loss account.

Question 3

(Adapted from **Horngren *et al.* (2012)** – "Cost Accounting: A Managerial Emphasis", 14th Edition, Pearson Global Edition)

Seaside Minerals owns the rights to extract minerals from beach sands on Canary Islands. It has costs in three areas:

a) Payment to a mining subcontractor who charges 80 € per ton of beach sand mined and returned to the beach (after being processed to extract three minerals: ilmenite, rutile, and zircon).

b) Payment of a government mining and environmental tax of 40 € per ton of beach sand mined.

c) Payment to a barge operator. This operator charges 160,000 € per month to transport each batch of beach sand – up to 100 tons per batch per day – to the mainland and then return to Canary Islands (that is, 0 to 100 tons per day = 160,000€ per month; 101 to 200 tons per day = 320,000€ per month, and so on).

Each barge operates 25 days per month. The 160,000€ monthly charge must be paid even if fewer than 100 tons are transported on any day and even if Seaside Minerals requires fewer than 25 days of barge transportation in that month. The company is currently mining 160 tons of beach sands per day for 25 days per month.

Required:

1. What is the variable cost per ton of beach sand mined? What is the fixed cost per month?
2. Plot a graph of the variable costs and another graph of the fixed costs. Is the concept of relevant range applicable to your graphs? Explain.
3. What is the unit cost per ton of beach sand mined
    a. If 160 tons are mined each day?
    b. If 230 tons are mined each day?

    Explain the difference in the unit-cost figures.

Question 4

(Adapted from **Horngren *et al.* (2012)** – "Cost Accounting: A Managerial Emphasis", 14th Edition, Pearson Global Edition)

Each of the following cost items pertains to one of these companies: **General Electric** (a manufacturing-sector company), **Safeway** (a merchandise-sector company), and **Google** (a service-sector company):

a) Perrier mineral water purchased by Safeway for sale to its customers;
b) Electricity used to provide lighting for assembly-line workers at a General Electric refrigerator-assembly plant;
c) Depreciation on Google's computer equipment used to update directories of Web sites;
d) Electricity used to provide lighting for Safeway's store aisles;
e) Depreciation on General Electric's computer equipment used for quality testing of refrigerator components during the assembly process;
f) Salaries of Safeway's marketing personnel planning local-newspaper advertising campaigns;
g) Perrier mineral water purchased by Google for consumption by its software engineers;
h) Salaries of Google's marketing personnel selling banner advertising.

Required:

1. Distinguish between manufacturing-, merchandising-, and service-sector companies;
2. Distinguish between inventoriable costs and period costs;
3. Classify each of the cost items (a-h) as an inventoriable or a period cost. Explain your answers.

Question 5

North Winery Ltd. commercialises wine bottles and has reported profit as follows (variable costing bases):

	€
Sales (@ 4 €)	6,000,000
Less: variable costs	
Manufacturing costs	2,250,000
Selling and administrative costs	600,000
Total variable costs	2,850,000
Contribution margin	**3,150.000**
Less: fixed costs	
Manufacturing costs	1,064,000
Selling and administrative costs	880,000
Total fixed costs	1,944,000
Net income	**1,206,000**

Assume there was no opening stock of wine and production was 1,520,000 bottles.

Required:

1. Prepare the profit and loss account using absorption costing.
2. Reconcile the absorption costing and the variable costing profit figures. Explain.

Question 6

During the first two years of operations, a company reported profit as follows (absorption costing basis):

	Year 1	Year 2
Sales (@ 50 €)	2,000,000 €	2,500,000 €
Opening stocks	-	180,000 €
Cost of goods manufactured (@ 36 €)	1,620,000 €	1,620,000 €
Goods available for sale	1,620,000 €	1,800,000 €
Less ending stocks	180,000 €	-
Cost of goods sold	1,440,000 €	1,800,000 €
Gross margin	560,000 €	700,000 €
Selling and administrative expenses*	420,000 €	460,000 €
Profit	140,000 €	240,000 €

* Includes 4 € per unit variable and 260,000 € fixed costs each year.

The company's 36 € unit product costing is computed as follows:

Direct materials	8 €
Direct labour	14 €
Variable manufacturing overhead	2 €
Fixed manufacturing overhead	12 €
Unit product cost	36 €

Required:

1. Prepare the profit and loss account for each year in the contribution format using variable costing.
2. Reconcile the absorption costing and the variable costing profit figures for each year.
3. Compute the break-even point and quote the assumptions on which cost-volume-profit analysis is based.

Question 7

(Adapted from **Horngren *et al.* (2012)** – "Cost Accounting: A Managerial Emphasis", 14th Edition, Pearson Global Edition)

Each **WalkWear Company** operates a chain of shoe stores that sell 10 different styles of inexpensive men's shoes with identical unit costs and selling prices. A unit is defined as a pair of shoes. Each store has a store manager who is paid a fixed salary. Individual salespeople receive a fixed salary and a sales commission. WalkWear is considering opening another store and collected the following information:

Unit variable data (per pair of shoes)		**Annual fixed costs**	
Selling price	**32.00 €**	Rent	60,000 €
		Salaries	204,000 €
Cost of shoes	22.00 €	Advertising	82,000 €
Sales commission	2.00 €	Other fixed costs	26,000 €
Variable cost per unit	**24.00 €**	Total fixed costs	**372,000 €**

Required:

1. What is the annual breakeven point in (a) units sold and (b) revenues?
2. If 37,000 units are sold, what will be the store's operating income (loss)?
3. If sales commissions are discontinued and fixed salaries are raised by a total of 89,000€, what would be the annual breakeven point in (a) units sold and (b) revenues?
4. [Refer to the original data] If, in addition to his fixed salary, the store manager is paid a commission of 0.25€ per unit sold, what would be the annual breakeven point in (a) units sold and (b) revenues?
5. [Refer to the original data] If, in addition to his fixed salary, the store manager is paid a commission of 0.25€ *per unit in excess of the breakeven point*, what would be the store's operating income, if 50,000 units were sold?

Question 8

Hamburg Concessions currently sells hot dogs. During a typical month, the stand reports a profit of 9,000 € with sales of 50,000 €, fixed costs of 21,000 €, and variable costs of 0.64 € per hot dog.

Next year, the company plans to start selling nachos for 3 € per unit. Nachos will have a variable cost of 0.72 € and new equipment and personnel to produce nachos will increase monthly fixed costs by 8,880 €. Initial sales of nachos should total 5,000 units. Most of the nacho sales are anticipated to come from current hot dog purchasers, therefore, monthly sales of hot dogs are expected to decline to 22,500 €.

After the first year of nacho sales, the company president believes that hot dog sales will increase to 40,500 € a month and nacho sales will increase to 9,000 units a month.

Required:

1. Determine the monthly breakeven sales in dollars before adding nachos.
2. Determine the monthly breakeven sales during the first year of nachos sales.

Question 9

(Adapted from **Horngren *et al.* (2012)** – "Cost Accounting: A Managerial Emphasis", 14th Edition, Pearson Global Edition)

Gamex Ltd., manufactures game systems. Gamex has decided to create and market a new system with wireless controls and excellent video graphics. Gamex's managers are thinking of calling this system the Yew. Based on past experience they expect the total life cycle of the Yew to be four years, with the design phase taking about a year.

They budget the following costs for the Yew:

		Total fixed costs over four years	Variable cost per unit
Year 1	R&D costs	6,590,000 €	---
	Design costs	1,450,000 €	---
Years 2-4	Production	19,560,000 €	50€ per unit
	Marketing & Distribution	5,242,000 €	10€ per unit
	Customer service	2,900,000 €	---

Required:

1. Suppose the managers at Gamex price the Yew system at 110€ per unit. How many units do they need to sell to break even?
2. The managers at Gamex are thinking of two alternative pricing strategies.
    a. Sell the Yew at 110€ from the outset. At this price they expect to sell 1,500,000 units over its life-cycle.
    b. Boost the selling price of the Yew in year 2 when it first comes out to 240€ per unit. At this price they expect to sell 100,000 units in year 2. In year 3 and 4 drop the price to 110€ per unit. The managers expect to sell 1,200,000 units in years 3 and 4.

    Which pricing strategy would you recommend? Explain.
3. What other factors should Gamex consider in choosing its pricing strategy?

Question 10

Gate Ltd., a manufacturer and distributor of mobile phones, knows that in order to achieve a 20 per cent share of the domestic market next year the selling price per unit for its standard product should be set at 120 €. The company wishes to earn profit equal to 10 per cent of the sales. Unit cost is anticipated to be 110 € next year.

Required:

1. What is the target cost per unit for Gate's standard product?
2. Distinguish between target costing and kaizen costing.

Question 11

A

For the next year **Plastex Ltd.** has capacity to make 60,000 units of its plastic product. The variable cost of production is 4€ per unit. Fixed costs per annum are budgeted at 120,000€.
In the past prices have been set on a **cost plus basis**, with 25% being added to the full cost per unit. Overheads being absorbed on the assumption of full capacity utilisation. As there is a depressed market, it is now suggested that the market research survey would help to set a more profitable price for the product.

The survey discloses the following:

Price per unit €	Anticipated demand units
6.50	68,000
7.00	55,000
7.50	46,000
8.00	40,000
8.50	28,000
9.00	------

Required:

1. If the cost plus 25% price were charged and the market survey proved reliable, what would be the estimated profit for next year?
2. If the market survey proved reliable what would be the profit maximising price?

B

O **Electromex, Ltd.** wishes to capture 20% of the market for new type of heating equipment. Market research has established that the selling price to achieve this volume is 375 € per unit. Calculate the **target cost** for the new heating equipment, considering that the company's target profit margin for this type of product is 30%.

C

Explain both pricing strategies and discuss the difference between them.

Question 12

OnlyBoats Ltd. has been asked to refit a boat for a customer. Skilled labour costing of 8 € per hour will be required for the refit. The workers will have to be taken off from the production of canoes for resale for a total of 240 hours. The canoes are sold for 240 € each and each take 12 hours of skilled labour. The cost card for canoes is as follows:

Cost per Canoe

Direct materials	40 €
Direct labour	96 €
Variable overheads	20 €
Fixed overheads	60 €
Total cost	**216 €**

What is the relevant cost of labour when assessing the viability of the refit contract?

Question 13

Even Ltd. specialises in the production of white paint. It normally produces three types of white paint, details as follows:

	Gloss	Emulsion	Undercoat
Expected demand next period (drums)	3,000	5,000	4,000
Selling price per drum	275 €	225 €	150 €
Cost per drum:			
Variable costs	185 €	165 €	100 €
Allocated fixed costs	55 €	45 €	30 €
	240 €	210 €	130 €
Profit per drum	35 €	15 €	20 €
Processing hours per drum	5 hours	2.5 hours	2 hours

Fixed costs have been allocated to products on the assumption that full demand would be matched by production, but due to machine breakdown, processing hours are **limited** to 30,000 hours for the next period.

Assuming that any shortfall in supply of one product does not affect demand for the other products:

1. What are the expected profits, if the company decides to meet next period demand for Gloss and Emulsion and sell **no** Undercoat?
2. What will be the contribution if the company chooses the product mix that will maximise its profits?

Question 14

PenínsulAIR operates scheduled commercial passenger flights between regional centres. The company's aircraft have three passenger classes: Club, Business and Economy. The available landing slots mean that current passenger capacity is limited. The company has 16 aircrafts, each of which carries 125 passengers. Each aircraft makes five flights per day. The average flight is 500 miles.

Key demand and cost data are set out below:

	Club	Business	Economy	Total
Demand (passenger-miles per day)	1,000,000	3,500,000	2,000,000	6,500,000
Fares per passenger-mile	0.90 €	0.60 €	0.50 €	------
Variable costs per passenger mile	0.38 €	0.22 €	0.10 €	------

Fixed operating costs average 0.35 € per passenger-mile. How should the company arrange its aircraft seating to maximise short-term profitability? Explain.

Question 15

Southwestern Company needs 1,000 motors in its manufacture of automobiles. It can buy the motors from Jinx Motors for 1,250€ each. Southwestern's plant can manufacture the motors for the following costs per unit:

Direct materials	500
Direct manufacturing labor	350
Variable manufacturing overhead	1 00
Fixed manufacturing overhead	350
Total	1,300€

If Southwestern buys the motors from Jinx, 70% of the fixed manufacturing overhead applied will not be avoided.

Required:

1. Should the company make or buy the motors?
2. What additional factors should Southwestern consider in deciding whether or not to make or buy the motors?

Question 16

Maria Salvador, Ltd. produces clothing for the luxury market. The company has only one supplier since they use a special fabric. They have a contract with a company for the whole output – a maximum of 7,700 m2 of the fabric per week, at a selling price of 25€/m2. Maria Salvador, Ltd. has the following demand, selling price and costs for its products:

	Scarves	Blouses	Skirts
Demand (units per week)	1,000	2,000	1,500
Selling price per unit	50€	90€	125€
Fabric per unit (m2)	1	2	3
Direct labour hours per unit	0.25	0.50	0.50
Packing costs per unit	5€	7€	7€

Fixed costs are 22,500 € per week for a five-day working week and 400 direct labour hours per day are available at 10€ per hour.

Required:
Identify the most profitable weekly production plan and compute the profit for that plan.

Question 17

This problem introduces the cost accounting system called "job-costing". This system attempts to (a) measure the direct costs of each order and (b) allocate the indirect costs on the basis of an overhead rate.

Movex, Corp. produces furniture by order / contract and uses a job-order cost system. At the beginning of January, they had order 397 in process, carrying the following costs from the previous period:

Raw materials	80,000 €
Direct labour	40,000 €
Overheads	20,000 €

The company applies overhead cost to jobs on the basis of direct labour hours worked. For the year just started, management estimated that it would work 150,000 labour hours and incur about 1,800,000 € in manufacturing overhead costs.

In January, the following events took place:

1. Order 397 was finished, using additional 50,000 € of direct materials, and 25,000 € of direct labour (3,125 hours). Order 397 was sold for 300,000 €.
2. Order 401 was started and finished. 150,000 € of raw materials, and 44,000 € (5,500 hours) of direct labour were used for that order. Order 401 was sold for 350,000 €.
3. Order 402 was started. 48,000 € of direct labour (6,000 hours), and 120,000 € of raw materials were used for that order, which was not finished at the end of the month.
4. Overhead costs incurred during the month were:

Indirect materials	12,000 €
Indirect labour	25,000 €
Depreciation	90,000 €
Utilities	48,000 €

5. Selling and administrative expenses were 57,500 €.

Required:
1. Compute the cost of each order;
2. Prepare a profit and loss account for January.

Two possibilities arise with respect to calculating the absorption rate – doing it ***a priori*** or ***a posteriori***.

If it is done a posteriori, that is, according to actual data, then this means that either the time period chosen for this purpose is short (such as a week or month), in which case the overhead rate will be constantly fluctuating (especially if the business is seasonal), or else that the period is relatively long (such as a year), and then one must wait until December to be able to calculate the full cost of all production orders, even those which were finished in January.

As a result, in practice, a **predetermined or standard rate** is used. This rate is established at the beginning of the year based on data taken from experience, with whatever modifications are expected for the coming year. All orders are debited overhead at this rate until the end of the year, when the actual total amount of overhead is known. This total will not agree with the amount of overhead allocated to products except by chance; although it is hoped, provided the rate used is calculated based on reasonable expectations, that the difference will not be too great.

- ***Over-absorption*** (or over-applied) overhead if the overhead which has been absorbed is greater than the real overhead;
- ***Under-absorption*** (or under-applied) overhead if the reverse is true.

Two reasons:
- Actual overhead expenditure not as budget;
- Actual activity levels not as budget.

Question 18

A manufacturing business, **Grimoak, Corp.**, organises its production into four cost centres. Last month the company produced 60,000 items of product. Further details of the costs are included in the following table:

Cost centre	Production overhead (excluding the factory rental)	Floor area
Machining	291,975 €	1,500 sq. m.
Assembly & finishing	130,305 €	1,700 sq. m.
Packaging	116,140 €	1,600 sq. m.
Maintenance & repairs	68,965 €	2,100 sq. m.
Total	607,385 €	6,900 sq. m.

Maintenance & repairs is a service cost centre that has worked 6,000 LH to Machining, 3,400 LH to Assembly & finishing and 5,800 LH to Packaging.

Required:

1. Using the floor area as base of apportionment, compute the cost of the factory rental (23,115 €) of each cost centre.
2. Calculate the overhead absorption rate for each department on the following basis:
    a. Machining - machine time - 120,000 MH
    b. Assembly & Finishing - direct labour hours - 30,000 LH
    c. Packaging - units of production - 60,000 items
    d. Maintenance & Repairs - direct labour hours - 15,200 LH
3. The prime cost and timing details for one unit of production are:

	€
Materials	16.20
Direct labour	19.00
Prime cost (or direct cost)	35.20

Each unit uses 2 hours of machine time in the machining department.
Each unit uses 0.5 direct labour hours in the assembly and finishing department.

Calculate the total production cost for one unit of the company's product.

Question 19

Supermercado da Estrela has decided to increase the size of its store. It wants information about the profitability of individual product lines: soft drinks, fresh produce, and packaged food.

	Soft drinks	Fresh produce	Packaged food
Revenues (€)	317,400	840,240	483,960
Cost of goods sold (€)	240,000	600,000	360,000
Cost of bottles returned (€)	4,800	0	0
Number of purchase orders placed	144	336	144
Number of deliveries received	120	876	264
Hours of self-stocking time	216	2,160	1,080
Items sold	50,400	441,600	122,400

Additional information for the current year:

Activity	Description of activity	Total costs	Cost-allocation base
Bottle returns	Returning of empty bottles to store	4,800	Direct tracing to soft-drink line
Ordering	Placing orders for purchases	62,400	624 purchase orders
Delivery	Physical delivery and receipt of merchandise	100,800	1,260 deliveries
Shelf-stocking	Stocking of merchandise on store shelves	69,120	3,456 hours of shelf-stocking time
Customer support	Assistance provided to customers (i.e. checkout, bagging...)	122,880	614,400 items sold
		360,000	

Required:

1. The supermarket currently allocates store support costs to product lines on the basis of cost of goods sold of each product line. Calculate the operating income as a percentage of revenues for each product line.
2. If they use an ABC system, calculate the operating income as a percentage of revenues for each product line.
3. Comment on your answers above.

Question 20

TekSound, Ltd. makes two products, a radio with a built-in ***tape player*** and one with a built-in ***compact disc*** (CD) player. For the current year, TekSound has budgets sales of 50,000 CD units and 200,000 tape units. All production is sold to auto manufacturers for installation in new cars and trucks.

Direct costs:

	CD unit	Tape unit
Direct materials	90 €	50 €
Direct labour* (10 € per direct labour hour)	20 €	20 €

*Both products require two labour hours to complete, therefore the company plans to work 500,000 hours.

Total manufacturing overhead costs for the current year are estimated to be 10,000,000 €.

Required:

1. Compute the unitary product cost, assuming the company allocates overheads based on labour-hours.
2. The ABC project team has developed the following basic information:

Activity e *cost drivers*	Estimated overhead cost	Expected activity		
		CD	Tape	Total
Material receipts (receipts)	2,000,000 €	1,800	3,200	5,000
Machine setups (setups)	2,600,000 €	3,000	1,000	4,000
Production orders (orders)	900,000 €	400	800	1,200
Product testing (tests)	3,400,000 €	16,000	4,000	20,000
Machine related tasks (machine hours)	1,100,000 €	300,000	700,000	1,000,000

   Compute the unitary product cost, using activity-based costing. Comment the results.
3. Evaluate the benefits and limitations of activity-based costing.

Question 21

Banco Lusitano is examining the profitability of its ***premier account*** to its *private* customers segment. The bank earns an interest rate spread of 2% (the difference between the rate at which it lends Money and the rate it pays depositors) by lending money for home loan purposes at 6% while customers receive 4% on their average balance. Thus the bank gain 40€ on the interest spread if a depositor has an average premier account balance of 2,000€ (2,000€ X 0.02 = 40€).

The ***premier account*** allows depositors unlimited use of services such as deposits, withdraws, checking accounts, and foreign currency drafts. Depositors with balances of 1,000€ or more receive unlimited free use of services. Depositors with average balances of less than 1,000 € pay a fee of 15€/month.

The bank recently has implemented activity based costing to compute the cost of its services. Last year, the use of these services by three customers is as follows:

	Activity cost per *driver*	Account usage		
		Almeida	**B**arbosa	**C**ardoso
Deposits/withdraws in the branch	1.80 €	40	30	5
Deposits/withdraws with ATM	0.60 €	10	20	30
Bank checks written	6.00 €	12	4	2
Foreign currency drafts	9.00 €	6	1	14
Inquiries about account balance	0.75 €	12	24	8
Average *premier account* balance		1,200 €	800 €	25,000 €

Assume Almeida e Cardoso always maintain a balance above 1,000 €, whereas Barbosa has a balance below 1,000 € during 10 months of the year. Compute the profitability of each account for last year. Comment the results and advise **Banco Lusitano** regarding its account.