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VOTRE LIEN AVEC CE QUI COMPTE — CONNECTS YOU TO WHAT MATTERS

ADM2341B
Managerial Accounting
Third Quiz
November 24, 2016

Instructor: **B. La Rochelle, Ph.D., CPA, CMA**
Duration: **45 minutes**
Value: **5% of your final grade**

Note to students: This is a closed-book exam, containing 3 questions, worth 35 marks in total. Apart from sundry writing materials (pens, pencils and the like) and a noiseless, hand-held calculator, no examination aids are permitted

NAME: _____

STUDENT #: _____

Statement of Academic Integrity

The School of Management does not condone academic fraud, an act by a student that may result in a false academic evaluation of that student or of another student. Without limiting the generality of this definition, academic fraud occurs when a student commits any of the following offences: plagiarism or cheating of any kind, use of books, notes, mathematical tables, dictionaries or other study aid unless an explicit written note to the contrary appears on the quiz, to have in his/her possession cameras, radios (radios with head sets), tape recorders, pagers, cell phones, or any other communication device which has not been previously authorized in writing.

Statement to be signed by the student:

I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this quiz.

Signed:_____

Note: A quiz without this signed statement will not be graded and will

receive a grade of zero.

Question 1

Layton Corporation operates two divisions, the A Division and the B Division. Both divisions manufacture and sell logs to paper manufacturers. The company is considering disposing of the B Division since it has been consistently unprofitable for a number of years. The income statements for the two divisions for the year ended December 31, 2015 are presented below:

	A Division	B Division	Total
Sales	$400,000	$300,000	$700,000
Cost of goods sold	150,000	200,000	350,000
Gross profit	250,000	100,000	350,000
Selling & administrative expenses	200,000	120,000	320,000
Net income	$ 50,000	$(20,000)	$ 30,000

Assume that in each division, 80% of cost of goods sold is variable costs and 20% of selling and administrative expenses are variable costs. The remaining costs include 50 % of traceable costs.

Required (15 marks total):

1. (8 marks) Redo the income statement using the contribution format.

2. (7 marks) Management feels it can save 60 % of all traceable costs if it discontinues operation of the B Division. Determine whether the company should discontinue operating the B Division.

Question 2

Movie House has 4,000 machine hours available to use to produce either Product A or Product B. The cost accounting department developed the following unit information for each of the products:

	Product A	Product B
Sales price	$20.00	$40.00
Direct materials	5.00	8.00
Direct labour	3.00	2.00
Variable manufacturing overhead	4.50	5.00
Fixed manufacturing overhead	3.00	5.00
Machine time required	15 minutes	75 minutes

Required (6 marks):

Management wants to know which product to produce, in order to maximize the company's income. Discuss, with calculations.

Question 3

Management of ABC Inc. presents you with the following information, in relation to the production of a particular item of furniture;

Units in beginning inventory	---
Units produced	25,000
Units sold	21,500
Direct materials	200,000
Fixed manufacturing overhead	75,000
Direct labour	250,000
Fixed selling and administrative	110,000
Variable manufacturing overhead	50,000
Commissions	100,000

Required (14 marks total):

(a) (10 marks) Compute operating income using (i) variable costing and (ii) absorption costing.

(b) (4 marks) Discuss the comparative utility of variable costing versus absorption costing, including a breakeven analysis as part of your discussion.

Question 1

		A	B	Total
#1	Sales	400,000	300,000	700,000
Less:	Variable:			
	COGS	120,000	160,000	280,000
	Selling & Admin	40,000	24,000	64,000
		160,000	184,000	344,000
	Contribution Margin	240,000	116,000	356,000
Less:	Fixed:			
	Manufacturing OH	30,000	40,000	70,000
	Selling & Admin	160,000	96,000	256,000
		190,000	136,000	326,000
	Operating Income	50,000	(20,000)	30,000

#2
50% [20% (COGS)] = FC traceable
50% [80% (Selling & Admin)] = FC traceable

(0.5)(0.2)(200,000) = 20,000 → COGS
(0.5)(0.8)(120,000) = 48,000 → S & A
68,000 → Costs avoided

Opportunity Cost → (116,000) → Lost CM
(48,000) → Loss in B

A + B = $2,000 → Operating Income

VS

$30,000

∴ Do not discontinue division B since the operating income will decrease by 20,000 < 30,000

Q1

	A Division	B Division	Total
Sales	$400,000	$300,000	$700,000
COGS	150,000	200,000	350,000
Gross profit	250,000	100,000	350,000
Selling & Admin cost	200,000	120,000	320,000
Net income	50,000	(20,000)	30,000

1. Contribution format

	A Division	B Division
sales	$400,000	$ 300,000
COGS	150,000 x .80 = 120,000	200,000 x .80 = 160,000
Gross profit	280,000	140,000
Selling & Admin cost	200,000 x .20 = 40,000	120,000 x .20 = 24,000
	240,000	116,000
Traceable costs	95,000	68,000
Contribution Margin	$145,000	$ 48,000

Traceable costs are 50% of remaining costs.

∴

	A Division	B Division
COGS	30,000 x .50 = 15,000	40,000 x .50 = 20,000
Selling & Admin	160,000 x .50 = 80,000	96,000 x .50 = 48,000
Traceable	$95,000	$68,000

2.

Contribution Margin of B Division = $48,000

CM of B is an opportunity cost when closing B

gains from closing B, 60% of all traceable costs saved.

	A		B		
traceable costs	$95,000	+	68,000	=	163,000

Saved money = 163,000 × .6 = $97,800

however fixed costs of B retained no matter what outcome.

Saving	Losing
897,800	148,000

∴ Division B should close.

Question 2

	A	B
Price	20	40
Dmat	5	8
Dlab	3	2
V. OH	4.50	5
CM	$7.5	$25

Per hour units: $\frac{60min}{15min} = 4$ $\quad\quad$ $\frac{60min}{75min} = 0.8$

CM/hr: $\$7.5 \times 4 = \$30/hr$ $\quad\quad$ $\$25 \times 0.8 = \$20/hr$

∴ Product A should be produced since it has a higher contribution margin per hour given a limited number of hours of 4000, allowing for higher profit.

Question 2

	Product A	Product B
Sales Price	$20.00	$40.00
Direct Materials	5.00	8.00
Direct Labour	3.00	2.00
Variable MOH	4.50	5.00
~~Irrelevant~~ fixed MOH	3.00	5.00
Machine Time Required	15 mins	75 mins

Contribution Margin	Product A	Product B
Sales price	$20.00	$40.00
DM	5.00	8.00
DL	3.00	2.00
VMOH	4.50	5.00
Machine Time	15 mins	75 mins
CM	$7.5/15 mins	$25/75 mins
CM/hr	$30/hr	25/75 = x/60 75x = 25x60 CM/hr = $20/hr

∴ the contribution Margin for Product A is higher than that of Product B

∴ The company should produce Product A to maximize income.

Question 3

		Per Unit
Dmat	200,000	8
Dlab	250,000	10
Fixed OH	75,000	3
Var. OH	50,000	2
Total Manufact. Cost	575,000	23

(1): $\frac{575,000}{25,000}$ = $23/unit

↑ Absorption Cost

Variable Cost

8
10
2
$20/unit

Absorption Costing:

Sales 21500 x 40		860,000
Less: COGS:		
Inventory, beg	0	
Produced 23 x 25,000	575,000	
Inventory, end	80,500	
Sold 23 x 21500		494,500
Gross Profit		365,500
Selling & Admin		
Fixed	110,000	
Commissions	100,000	210,000
Operating Income		155,500

ii) Variable Costing:

	Sales		860,000
less	COGS:		
	Inventory, beg	0	
	Produced	500,000	
	Inventory, end	70,000	
	Sold	430,000	
	Commissions	100,000	530,000
	CM		330,000
	Fixed Man OH	75,000	
	Fixed S & A	110,000	185,000
	Operating Income		145,000

CM amt = $\frac{330,000}{21,500} = 15.35$

b) Absorption costing omits fixed manufacturing costs of the ending inventory allowing the profit to appear $10,500 higher. ($3 x 3,500 = $10,500), treats it as product cost and is inventoried. Variable costing treats it as a period cost. Breakeven will be lower in absorption since certain amount is not counted. Variable more accurately represents the costs incurred during the period leading to a higher apparent B.E. point.

BE = $\frac{185,000}{15.35}$

= 12,052 units

Q3

B

a) Variable Costing — must find costing per unit

Variable cost of sales	Sales = 21,500 units × $40/unit = $860,000
Opening Inventory	0
Production	25,000 units
Ending Inventory	3,500 units
Direct Materials	$200,000 / 25,000 units = $8/unit
Direct Labour	250,000 / 25,000 units = $10/unit
Variable MOH	50,000 / 25,000 units = $2/unit
	= $20/unit
Commissions (variable Selling & Admin)	100,000 / 21,500 units = $4.65/unit

Fixed Cost of sales

fixed MOH	$75,000
fixed Selling & Admin	110,000
fixed cost of sales	$185,000

∴

Sales	$860,000
Variable cost of Sales	
OI	0
Production	25,000 units × $20/unit = $500,000
EI	3,500 units × $20/unit = (70,000)
	430,000
Variable Selling/Admin	21,500 units × $4.65/unit = $100,000
Fixed Costs	
Fixed MOH	75,000
Fixed Selling / Admin	110,000
Operating income	145,000

Absorption Costing Fixed MOH = $75,000 / 25,000 = $3/unit
= $23/unit

Sales		$860,000
Variable cost of sales		
OI		0
Production	25,000 x $23/unit =	$575,000
EI	3,500 x $23/unit =	(80,500)
		365,500
Variable Selling & Admin	21,500 x $4.65/unit =	100,000
		265,500
Fixed cost of Sales		
Fixed Selling & Admin		110,000
Operating Income		155,500

b) Variable costing is the true, honest representation of a company's income. It is perfect for managers and internal reporting, but cannot be used to report externally due to regulations. Absorption costing inventories fixed cost in the Ending Inventories, leading to an untrue operating income. Revenue cannot be generated solely from production. However, it is the only costing method accepted for external reporting.

Variable
CM/unit = $40 - $24.65 = $15.35
FC = 185,000
Breakeven = $185,000 / $15.35/unit
= 12053 units ← huge difference →

Absorption
CM/unit = $40 - $27.65 = $12.35/unit
Break-even = $110,000 / $12.35/unit
= 8907 units

Question 3 18/+

a) i) Variable costing

Direct materials ($200,000 ÷ 25,000)		$8
Direct labour ($250,000 ÷ 25,000)		$10
Variable manufacturing overhead ($50,000 ÷ 25,000)		$2
Unit product cost		$20

Sales (21,500 x $40)		$860,000
Variable expenses		
Variable cost of goods sold		
Beginning inventory	$ 0	
Add: Cost of goods manufactured (25,000 x $20)	500,000	
Goods available for sale	500,000	
Less: Ending inventory [(25,000 - 21,500) x $20]	(70,000)	
Variable cost of goods sold	430,000	
Commissions	100,000	530,000
Contribution margin		330,000
Fixed expenses		
Fixed manufacturing overhead	75,000	
Fixed selling and admin.	110,000	
Total fixed expenses		185,000
Operating income		$ 145,000

ii) Absorption costing

Direct materials	$8
Direct labour	10
Variable manufacturing overhead	2
Fixed manufacturing overhead ($75,000 ÷ 25,000 units)	3
Unit product cost	$23

Sales (21,500 x $40)		$860,000
Cost of goods sold		
Beginning inventory	$ 0	
Add: Cost of goods manufactured ($23 x 25,000)	575,000	
Goods available for sale	575,000	
Less: Ending inventory [$23 x (25,000 - 21,500)]	(80,500)	
		494,500
Gross margin		365,500
Operating expenses		
Fixed selling and admin.	110,000	
Commissions	100,000	210,000
Operating income		$ 155,500

b) Breakeven point in units $= \frac{\text{Fixed expenses}}{\text{Unit CM}}$

$= \frac{(75,000 + 110,000)}{(\$330,000 \div 21,500 \text{ units})}$

$= 12,053$ units

Variable costing can be used in the contribution format income statement, whereas absorption costing can't. This is because change in inventory does not affect absorption costing, as only revenue drives it. The \$10,500 ($\$3 \times 3,500$ units from ending inventory is deferred into the inventory account under absorption costing, so using it for comparison purposes would be inaccurate.

Breakeven point in dollars $= \frac{\text{Fixed expenses}}{\text{CM ratio}}$

$= \frac{(75,000 + 110,000)}{(330,000 \div 860,000)} = \$482,121$