Managerial Accounting and Cost Concepts

153. Bill Pope has developed a new device that is so exciting he is considering quitting his job in order to produce and market it on a large-scale basis. Bill will rent a garage for $300 per month for production purposes. Utilities will cost $40 per month. Bill has already taken an industrial design course at the local community college to help prepare for this venture. The course cost $300. Bill will rent production equipment at a monthly cost of $800. He estimates the material cost per unit will be $5, and the labor cost will be $3. He will hire workers and spend his time promoting the product. To do this he will quit his job which pays $3,000 per month. Advertising and promotion will cost $900 per month.

sunk cost

not differential

opportunity cost

Required:

Complete the chart below by placing an "X" under each heading that helps to identify the cost involved. There can be "Xs" placed under more than one heading for a single cost, e.g., a cost might be a sunk cost, an overhead cost and a product cost; there would be an "X" placed under each of these headings opposite the cost.

	Opportunity Cost	Sunk Cost	Variable Cost	Fixed Cost	Manufacturing Overhead Cost	Product Cost	Selling Cost	Differential Cost*
Garage rent				X	X	X		X
Utilities				X	X	X		X
Cost of the industrial design course		X						
Equipment rented				X	X	X		X
Material cost			X			X		X
Labor cost			X			X		X
Present salary	X							X
Advertising				X			X	X

* Between the alternatives of going into business to make the device or not going into business to make the device.

	Opportunity Cost	Sunk Cost	Variable Cost	Fixed Cost	Manufacturing Overhead Cost	Product Cost	Selling Cost	Differential Cost*
Garage rent				X	X	X		X
Utilities				X	X	X		X
Cost of the industrial design course		X						
Equipment rented				X	X	X		X
Material cost			X			X		X
Labor cost			X			X		X
Present salary	X							X
Advertising				X			X	X

AACSB: Reflective Thinking
AICPA BB: Critical Thinking
AICPA FN: Decision Making
Blooms: Apply
Learning Objective: 02-01 Identify and give examples of each of the three basic manufacturing cost categories.
Learning Objective: 02-02 Distinguish between product cost and period costs and give examples of each.
Learning Objective: 02-03 Understand cost behavior patterns including variable costs; fixed costs; and mixed costs.
Learning Objective: 02-07 Understand cost classifications used in making decisions: differential costs; opportunity costs; and sunk costs.
Level: 2 Medium

163. Utility costs at one of Helker Corporation's factories are listed below:

	X Machine-Hours	Y Utility Cost
January	4,711	$34,799
February	4,780	$35,138
March	4,704	$34,762
April	4,768	$35,093
May	4,723	$34,872
June	4,721	$34,840
July	4,759	$35,053
August	4,730	$34,918
September	4,720	$34,834

High / Low

Management believes that utility cost is a mixed cost that depends on machine-hours.

Required:

Estimate the variable cost per machine-hour and the fixed cost per month using the high-low method. Show your work! Round off all calculations to the nearest whole cent.

$\#\text{ Utility Cost} = \text{FC} + \text{VC rate}\left(\text{Mach Hrs}\right)$

$Y = a + b\,X$

$b = \dfrac{\text{rise}}{\text{run}} = \dfrac{\Delta Y}{\Delta X} \Leftarrow \dfrac{\$35{,}138 - 34{,}762}{4780 - 4704\ \text{MHs}} \Leftarrow \dfrac{\$376}{76\ \text{MHs}} \Leftarrow b = \$4.95\ \text{per MH}$

$Y = a + \$4.95\ \text{per MH}\,(X)$

Fet (high): $\#35{,}138 = a + \$4.95\ \text{per MH}\,(4{,}780\ \text{MH})$

$a = \#11{,}477.20$

$Y = \$11{,}477.20 + \$4.95\ \text{per MH}\,(X)$

FC per month — VC per MH

	Machine-Hours	Utility Cost
High activity level.....	4,780	$35,138
Low activity level	4,704	$34,762

Variable cost = Change in cost ÷ Change in activity
= ($35,138 - $34,762) ÷ (4,780 machine-hours - 4,704 machine-hours)
= $376 ÷ 76 machine-hours
= $4.95 per machine-hour
Fixed cost element = Total cost - Variable cost element
= $34,762 - ($4.95 per machine-hour × 4,704 machine-hours)
= $34,762.00 - $23,284.80
= $11,477.20

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Blooms: Apply
Learning Objective: 02-04 Analyze a mixed cost using a scattergraph plot and the high-low method.
Level: 1 Easy

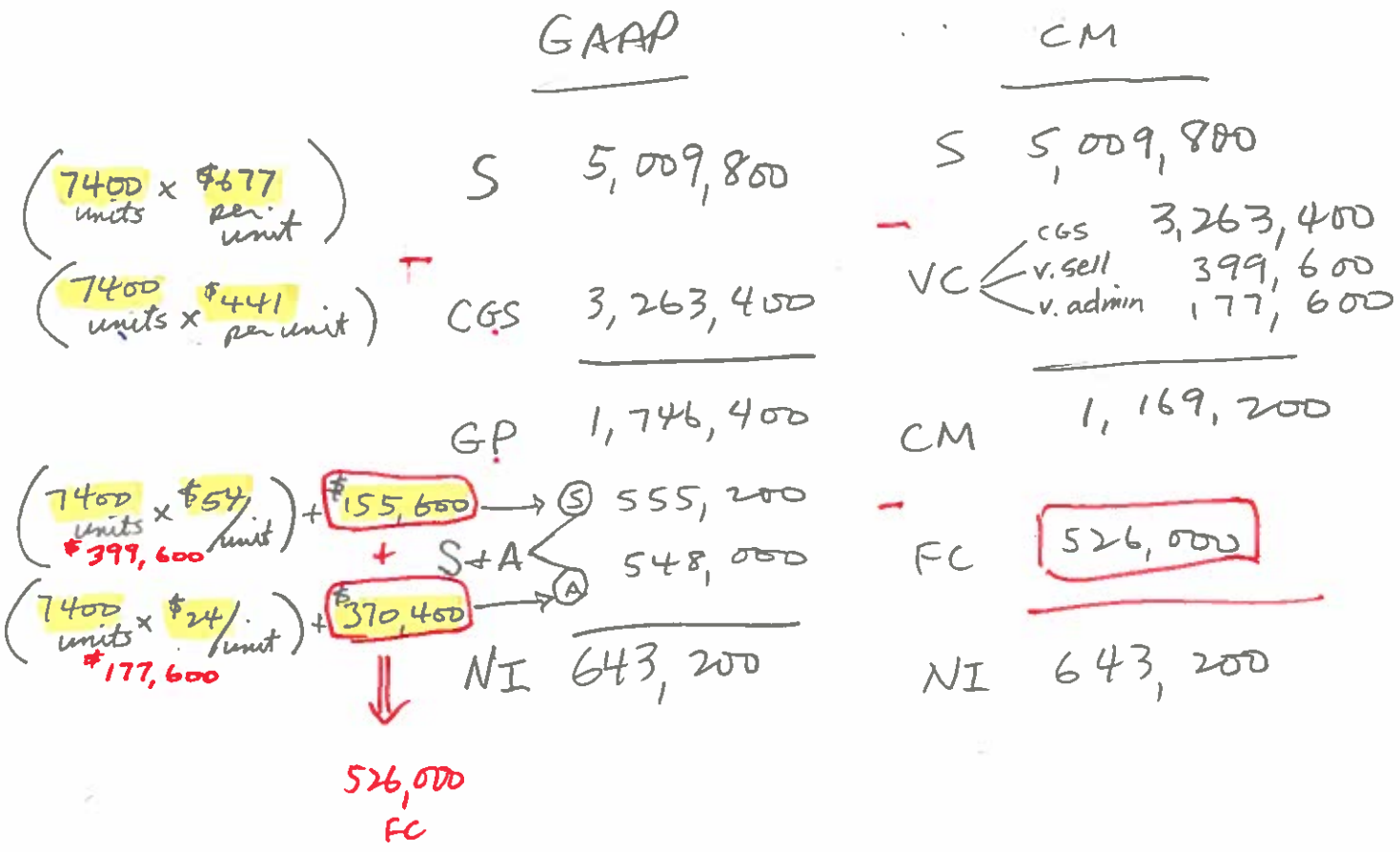
not realistic; leaving out FMOH

166 Whitman Corporation, a merchandising company, reported sales of 7,400 units for May at a selling price of $677 per unit. The cost of goods sold (all variable) was $441 per unit and the variable selling expense was $54 per unit. The total fixed selling expense was $155,600. The variable administrative expense was $24 per unit and the total fixed administrative expense was $370,400.

Required:

a. Prepare a contribution format income statement for May.

b. Prepare a traditional format income statement for May.



a. Contribution Format Income Statement

Sales (7,400 units × $677 per unit)		$5,009,800
Variable expenses:		
Cost of goods sold (7,400 units × $441 per unit)	$3,263,400	
Variable selling expense (7,400 units × $54 per unit)	399,600	
Variable administrative expense (7,400 units × $24 per unit)	177,600	3,840,600
Contribution margin		1,169,200
Fixed expenses:		
Fixed selling expense	155,600	
Fixed administrative expense	370,400	526,000
Net operating income		$643,200

b. Traditional Format Income Statement

Sales (7,400 units × $677 per unit)		$5,009,800
Cost of goods sold (7,400 units × $441 per unit)		3,263,400
Gross margin		1,746,400
Selling and administrative expenses:		
Selling expense ((7,400 units × $54 per unit) + $155,600)	$555,200	
Administrative expense ((7,400 units × $24 per unit) + $370,400)	548,000	1,103,200
Net operating income		$643,200

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Blooms: Apply
Learning Objective: 02-05 Prepare income statements for a merchandising company using the traditional and contribution formats.
Level: 2 Medium