Designing a comprehensive question for connecting topics in managerial accounting

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ABSTRACT

The purpose of this paper is to describe an integrated approach we have used in developing a comprehensive review or assessment question connecting managerial accounting topics. In this approach we are emphasizing the consistent application of cost behavior across topical areas. Without a consistent application of cost behavior, students may believe that the materials covered in the course are standalone and fragmented. Our goal is to establish a connection between the topics and demonstrate that all the materials covered in the course have a common purpose of providing useful and relevant information for management decision making. In this paper we present three independently developed examples covering broad and comprehensive areas in managerial accounting.

Keywords: Managerial Accounting – Assessment – Cost Behavior – Comprehensive Coverage

The Current Unconnected State of Managerial Accounting

Faculty teaching managerial accounting usually follow a typical managerial accounting textbook made of 12 to 18 chapters covering three major areas: I. Costing Systems, II. Relevant Costs and Decision Making and III. Planning, Control and Performance Analysis. These three area are usually presented in standalone format with minor connections and appreciation to the materials covered in previous chapters.

Typical Contents of a Managerial Accounting Course

Costing Systems	Relevant Cost and Decision Making	Planning, Control and Performance Analysis
Job Costing	Cost-Volume-Profit Analysis	Responsibility Accounting
Process Costing	Determining How Costs Behave	Operating Budget & Master Budget
Activity-Based Costing	Decision Making and Relevant Information	Flexible Budget
Inventory Costing and Capacity Analysis	Pricing Decisions and Cost Management	Capital Budget
Standard Costing		Balanced Scorecard
Cost Allocation		Management Control Systems
		Performance Measurement

Figure 1

Our goal in this paper is to offer a format and a methodology connecting the materials and topics covered in different chapters. This approach is designed to provide more interesting classes and foster long term retention. An integrated approach will encourage both accounting and business majors improve learning effectiveness because each chapter is a building block of a comprehensive system, helping management in day to day decision making. The starting point is to develop a clear course objective. The following graph demonstrates the three categories of materials covered in the course. We use this graph at the beginning of every lecture to inform our students how the subject relates to the materials that they have already covered. In the following pages we will explain how we have develop practice examples which capture topics covered in all three seemingly separate categories.

LITERATURE REVIEW

Teaching accounting in general is challenging because students do not have any direct or indirect exposure to the field and have no previous experience to relate to the topic. Bryant and Hunton (2000), Farley and Ramsay (1998), and Krausz et al. (1989) indicate that learning is enhanced when students can relate the new knowledge to their experience or visualize some practical applications. Teaching managerial accounting is not an exception. Students taking the course do not necessarily have previous experience in using managerial accounting tools to perform economic activities. Lightbody (1997) explains, "many students appear to perceive

management accounting topics … to be difficult… This is often attributed to the students' lack of experience in the actual processes which underlie managerial accounting principles being taught". (p. 255) One approach to remedy this problem is to create an opportunity for student to develop a substitute for practical experience. King et al (2000) suggest the use of a simple activity to provide a common understanding of business operations and production processes which can be applied throughout the course. In defense of their approach King et al, compare their approach with others who have tried different approaches to fill the experience GAP, They write: "Authors such as Cook (2002), Kern (2000 and 2002), Lightbody (1997), Groff (1989), Haskins and Crum (1985), and Krause et al. (1988) have developed games, role-playing or simulation exercises to use in accounting classrooms. However, most simulation and role-playing exercises usually involve a great deal of instructor and classroom time in planning, preparing, implementing, and grading. Given that many faculty members are teaching multiple courses, sections and students, a simpler common experience would be beneficial"

This is a useful suggestion particularly because the topical coverage in a typical managerial accounting textbook are similar, but are not presented in the same sequence, and the materials are not necessarily related to each other. The top textbooks in the field use different sequences in covering the same contents. (Braun & Tietz, (2018), Garrison, Noreen & Brewer (2018), Horngren, Datar, & Rajan, (2015)).

Some faculty, including the authors of this manuscript has used these textbooks with quite different sequences in order to create a closer connection between the topics and help the students to relate the materials to what they have already learned in previous classes. However, this does not completely resolve the issue. In this manuscript we have followed a different paradigm to reduce student's anxiety by creating a common formula to address multiple topics. We have developed some review examples to demonstrate that all the topics are connected. We follow the same approach is testing and assessment of learning.

Connecting Topics with a Comprehensive Practice Problem or Final Assessment

We believe one of the connecting topics is the recognition of Cost Behavior, representing the intersection of Costing Systems, Relevant Costs and Decision Making and Planning and Control. Clearly defining the differences between absorption costing systems and variable costing system Costing system is based on total or absorption costing and produces the functional income statement whereas most of the managerial accounting topics such as cost volume profit analysis and relevant cost and decision making and flexible budget for planning and control are based on contribution income statement represented in a variable costing. Therefore, a deep understanding of the differences between the total and variable costing will provide a linkage between the three major areas covered in the course.

Contribution Margin Income Statement (CMIS) at the Intersection of Managerial Accounting Topics
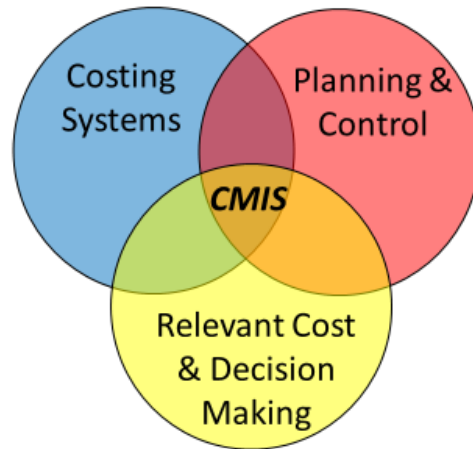

Figure 2

Product Costs are applied in Costing Systems utilizing direct material, direct labor and predetermined overhead rates per unit produced. Total Product Cost Accumulates these costs using the general formula:

The forecasting methodology used in Cost Behavior can be repeated when developing a budget utilizing variable costing for Planning and Control, conceptually connecting these topics for the remainder of the course. When forecasting results, the Total Variable Cost is the result of the computation. In contrast to variance analysis of actual results, where the Total Cost is divided by the units produced to solve for the average. In both applications, it is the same conceptual formula.

Defining the Key Formula in terms of basic mathematics $(y=(a*x) + b$ provides initial conceptual clarity for the development of the volume based variable costs and the non-volume based fixed costs as an introduction to a Contribution Margin Based Income Statement. Transitioning to the cost behavior formula establishes a computational bridge throughout the entire course. Forecasting and planning utilizing cost behavior are conceptually consistent with prior learning.

Overview: Three Examples of Comprehensive Questions

Three comprehensive examples to connect the topics of managerial accounting will be presented. These examples were independently developed by the authors in recognition of the need to integrate the topics with comprehensive questions. The first two examples are comprehensive review question while the third is a comprehensive exam utilizing templates that isolate average and volume impacts of the cost behavior formula.

The specific learning goals of the first example of a comprehensive review include:

- Identify various ways to classify costs (i.e. product/period, variable/fixed) and understand the different impact each has on financial statements.
- Define the concept of contribution margin and utilize it in decision making, especially in short term break-even and profit planning decisions.
- Identify and utilize relevant costs in analyzing various special decisions, including make/buy, lease/buy, segmented performance evaluation, transfer pricing, and special pricing decisions.
- Attain a working knowledge of operating and financial budgets applicable to manufacturers, service industry firms, merchandisers, and nonprofit organizations.
- Understand the benefits of standard cost systems and how such systems enhance management's ability to control costs and make proper decisions.

The second example, covers reconciling absorption costing and variable costing then extending the problem for control and performance evaluation.

First Example: Prepare and evaluate Cost Center performances

Morgan Manufacturing Company estimates that it will produce 6,000 units of product BB (Black Box) during the current month. The following is the static budget report for the period ended in June. The budget column is based on estimated production while the actual column is the actual cost incurred during the period.

Production in units	Budget	Actual	Differences Favorable F Unfavorable U
	6,000	6,200	
Variable costs			
Direct materials ($7)	$ 42,000	$ 44,268	$2,268 U
Direct labor ($13)	78,000	80,352	2,352 U
Overhead ($18)	108,000	117,180	9,180 U
Total variable costs	228,000	241,800	13,800 U
Fixed costs			
Depreciation	6,000	6,000	0
Supervision	3,800	3,600	200 F
Total fixed costs	9,800	9,600	200 F
Total costs	$237,800	$251,400	$13,600 U

Requirement:

1. Prepare the flexible budget report and explain the responsibility accounting implication of this report as compared with the static budget report.
2. Given the following standard and actual cost for each unit produced, calculate the total variance and all other relevant variances and explain how it will enhance the performance evaluation process.

Assume that the unit standard costs are:

Manufacturing Cost Elements	Quantity	×	Price	=	Cost
Direct materials	2 oz.	×	$ 3.50	=	$ 7.00
Direct labor	0.5 hrs.	×	$26.00	=	13.00
Manufacturing overhead	0.5 hrs.	×	$ 36.00	=	18.00
					$38.00

And unit actual costs are:

Manufacturing Cost Elements	Quantity	×	Price	=	Cost
Direct materials	2.1 oz.	×	$ 3.40	=	$ 7.14
Direct labor	0.54 hrs.	×	$24.00	=	12.96
Manufacturing overhead	0.54 hrs.	×	$ 35.00	=	18.90
					$39.00

Teaching Note Solution - Flexible Budget Report

	Flex Budget	Actual	Differences Favorable F Unfavorable U
Production in units	6,200	6,200	
Variable costs			
Direct materials ($7)	$ 43,400	$ 44,268	$ 868 U
Direct labor ($13)	80,600	80,352	248 F
Overhead ($18)	111,600	117,180	5,580 U
Total variable costs	235,600	241,800	6,200 U
Fixed costs			
Depreciation	6,000	6,000	0
Supervision	3,800	3,600	200 F
Total fixed costs	9,800	9,600	200 F
Total costs	$245,400	$251,400	$ 6,000 U

The static budget indicates that actual variable costs exceeded budgeted amounts by $13,600 representing $13,800 unfavorable variable and favorable fixed cost of $200. In contrast the flexible budget indicates that actual variable costs exceeded budgeted amounts by only $6,000 representing $6,200 unfavorable variable and favorable fixed cost of $200 the same as static budget.

Therefore, static budget is not is not appropriate to evaluate variable costs, however, it is a good tool to evaluate fixed costs, since these costs should not vary with changes in production volume.

To calculate the variances, we need to calculate: the followings

For Direct Materials	SQ = 2 x 6,200 = 12,400	SP = 3.5
For Direct Labor	SH = .5 x 6,200 = 3,100	SR = 26
For Overhead	SH = .5 x 6,200 = 3,100	SR = 36
For Direct Materials	AQ = 2.1 x 6,200 = 13,020	AP = 3.4
For Direct Labor	AH = .54 x 6,200 = 3,348	AR = 24
For Overhead	AH = .54 x 6,200 = 3,348	AR = 35

Teaching Note Solution - The analysis of the variances:

Total Variance

Actual costs incurred

Direct materials	$ 44,268
Direct labor	80,352
Manufacturing overhead	126,780
	251,400
Standard cost 6,200 X $38	245,400
Total variance	$ 6,000 U

Direct Materials Variances

Total	=	13,020 x 3.4 (AQ xAP)	−	12,400 x 3,5 (SQ xSP)	=	$ 868 U
Price	=	13,020 x 3.4 (AQ xAP)	−	13,020 x 3.5 (AQ xSP)	=	$1,302 F
Quantity	=	13,020 x 3.5 (AQ xSP)	−	12,400 x 3,5 (SQ xSP)	=	$2,170 U

Direct Labor Variances

Total	=	3,348 x 22 (AH xAR)	−	3,100 x 26 (SH xSR)	=	$ 248 F
Price	=	3,348 x 24 (AH xAR)	−	3,348 x 26 (AH xSR)	=	$6,696 F
Quantity	=	3,348 x 26 (AH xSR)	−	3,100 x 26 (SH xSR)	=	$6,448 U

Overhead Variance

Total	=	(111,600 + 9,800)	−	(117,180 +9600)	=	$ 5,380 U

Second Example: Using the following budget report answer the questions listed in the following page.

	BUDGET	ACTUAL
Units of output Planned and actual	5,000	4,000
Direct material units per unit of output	6 at $2 each	5 at $3 each
Labor hours per unit of Output	0.5 hrs. at $6 per hour	0.7 hrs. at $5 per hour

Flexible Budget

Sales	$225,000	$200,000
Less Variable Costs: Manufacturing:		
Direct Material	60,000	60,000
Direct Labor	15,000	14,000
Factory Overhead	20,000	21,000
Total	$95,000	$95,000
Selling and Administration	30,000	35,000
Contribution Margin	$100,000	$70,000
Less Fixed Costs:		
Manufacturing	20,000	22,000
Selling and Administration	$15,000	$15,000
Operating Income:	$65,000	$33,000

Questions:

1. Prepare the flexible budget
2. Construct cost estimation formula to predict
   a. the total cost,
   b. just the manufacturing cost
3. Assume that the company produced and sold 5000 units – using the static budget calculate the followings

A- Break Even in Units and in Dollar
B- What is Target Sales in Dollar to make an additional $40,000 a total of $100,000 operating income
C- At the current 5000 units sold what is the Operating leverage
D- At the current 5000 units sold what is the Margin of Safely in Dollar and Percentage.

4. Using the budget numbers assume that the company produced 4000 units, but sold only 3500 units -- using variable costing - build a contribution income statement and using the absorption costing – build a traditional income statement. You will be able to find the followings
   A- What is Contribution Margin
   B- What is Gross Margin
   C- What is Operating Income in Variable Costing
   D- What is Operating Income in Absorption Costing
   E- Reconcile between C and D

5. Calculate the following variances:

In General
   a) Operating Income Variance   _____
   b) How much of the Operating Income Variance is due to:
        Sales Volume Variance   _____
        Flexible Budget Variance   _____

For Material
   c) Material Price Variance   _____
   d) Efficiency (quantity) Variance   _____
   e) Pure Price Variance
   f) Combined Variance   _____

For Labor
   g) Labor Rate Variance   _____
   h) Efficiency Variance   _____
   i) Flexible Budget Variance   _____
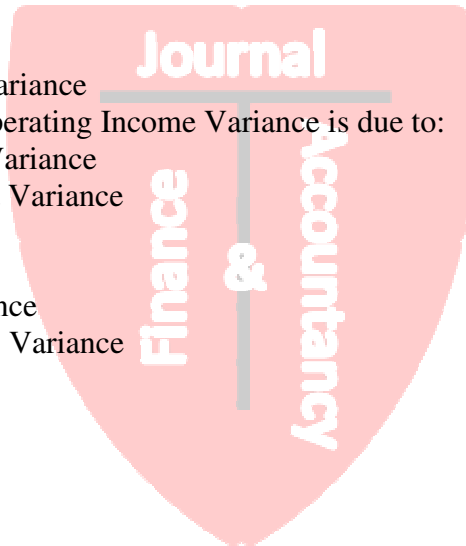
For Manufacturing Overhead Assume that the factory overhead is applied based on budgeted labor hours.

	Variable F.O.H.	Fixed F.O.H.
j) Spending Variance		
h) Efficiency Variance		
k) Production Volume Variance		
l) Flexible Budget Variance		
m) Total F.O.H. over or (under-applied)		

Teaching Notes for Example # 2

Solution: Flexible Budget

	BUDGET		ACTUAL
Units of output Planned and actual	5,000		4,000
Direct material units per unit of output	6 at $2 each		5 at $3 each
Labor hours per unit of Output	0.5 hrs. at $6 per hour		0.7 hrs. at $5 per hour
		Flexible Budget	
Sales	$225,000	$180,000	$200,000
Less Variable Costs: Manufacturing:			
Direct Material	60,000	48,000	60,000
Direct Labor	15,000	12,000	14,000
Factory Overhead	20,000	16,000	21,000
Total	$95,000	76,000	$95,000
Selling and Administration	30,000	24,000	35,000
Contribution Margin	$100,000	80,000	$70,000
Less Fixed Costs:			
Manufacturing	20,000	20,000	22,000
Selling and Administration	$15,000	15,000	$15,000
Operating Income:	$65,000	$45,000	$33,000

Solution: Cost Estimation

Construct cost estimation formula to predict
    a. the total cost, $Y = \$35,000 + 25\,X$
    b. just the manufacturing cost $Y = \$20,000 + 19\,X$

Solution: Cost Volume Profit Analysis

Assume that the company produced and sold 5000 units – using the static budget calculate the followings

        A- Break Even in Units = 35000 / (45-25) = 175
             in Dollar = 35000 / (20/45) = $78,750

        B- What is Target Sales in Dollar to make an additional $40,000 a total of $100,000 operating income

            Target Sales = (35,000 + 100,000) / (20/45) = $303,750

        C- At the current 5000 units sold what is the Operating leverage?

            Operating Leverage = CM/Operating Income = 100,000/65,000

        D- At the current 5000 units sold what is the Margin of Safely in Dollar and Percentage?

            Margin of Safety = Current Sales – BE = $225,000 -78,750 = $146,250

Solution: Absorption and Variable Costing

Using the budget numbers assume that the company produced 4000 units but sold only 3500 units -- using variable costing - build a contribution income statement and using the absorption costing – build a traditional income statement. You will be able to find the followings

        A-   What is Contribution Margin = $70,000
        B-   What is Gross Margin = $ 73,500
        C-   What is Operating Income in Variable Costing = $ 35,000
        D-   What is Operating Income in Absorption Costing = $ 37,500
        F-   Reconcile between C and D = Please see bellow

VARIABLE COSTING- CONTRIBUTION INCOME STATEMENT
(Production 4,000 & Sales 3,500@)

SALES	3,500 x $45		$157,500
LESS VARIABLE EXPENSES:			
MANUFACTURING	$19 per unit	$66,500	
SELLING & ADMINISTRATIVE		21,000	
TOTAL VARIABLE EXPENSES			$ 87,500
CONTRIBUTION MARGIN			$ 70,000
LESS FIXED EXPENSES:			
MANUFACTURING		$20.000	
SELLING $ ADMINISTRATIVE		15,000	
TOTAL FIXED EXPENSES			$ 35,000
Operating Income			$35,000

      Inventory $ 500 x $19 = 9500

ABSORPTION COSTING - GROSS MARGIN INCOME STATEMENT

SALES	3,500 x $45	$157,500
LESS MANUFACTURING COST OF GOODS SOLD		
(including fixed manufacturing) 3,500 x $24 (19+5)		84,000
GROSS PROFIT OR MARGIN		$ 73,500
LESS SELLING & ADMINISTRATIVE COSTS		36,000
Operating Income		$ 37,500

Inventory $ 500 x $24 = 12,000
Reconciliation between the two methods $37,500 - $35,000 = $2,500 = 12,000 – 9,500

Solution: Variances:

In General

     a) Operating Income Variance (65,000 – 33,000) $ 32,000 UF

     b) How much of the Operating Income Variance is due to:

          Sales Volume Variance   (65,000 – 45,000) $ 20,000 UF

          Flexible Budget Variance   (45,000 – 33,000) $ 12,000 UF

For Material
     c) Material Price Variance   AQ(AP-SP) = $ 20,000 UF

     d) Efficiency (quantity) Variance   SP(AQ-SQ) = $ 8,000 F

     e) Flexible Budget Variance   (AQ x AP) – (SQ x SP) = $ 12,000 UF

f) Combined Variance (AQ -SQ) x (AP – SP) = $ 8,000

For Labor

g) Labor Rate Variance   AH(AR-SR) = $ 2,800 F

h) Efficiency Variance   SR(AH-SH) = $ 4,800 UF

i) Flexible Budget Variance   (AH x AR) – (SH x SR) = $ 2,000 UF

For Manufacturing Overhead Assume that the factory overhead is applied based on budgeted labor hours.

	Variable F.O.H.	Fixed F.O.H.
j) Spending Variance AH(AR-SR) =	$ 1,400 F	$ 2,000 UF
h) Efficiency Variance SR(AH-SH) =	$ 6,400 UF	$ 0
k) Production Volume Variance	$ 0	$ 4,000 UF
l) Flexible Budget Variance:(AH x AR) – (SH x SR) =	$ 5,000 UF	$ 2,000 UF
m) Total F.O.H. over or (under-applied)	$ 11,000 (Underapplied)	

Third example of final exam problems covering controlling and performance analysis processes using an Excel based problem solving template rather than formulas. The Case Facts and Data Set are used to complete three partially completed templates. The solutions to each problem follow each template. The problems are: Full / Absorption vs Variable Costing, Flexible Budgeting and Variable Overhead Variances Analysis utilizing problem solving methodologies. These templates can be used either for an Excel based or paper based exam.

Case Facts for Entire Exam

You are the owner / operator of a business that sells delicious grilled hot dogs (HD) in the parking lot outside. You have made your plans into a budget using a standard costing system. You are now evaluating last month's results. You buy raw hot dogs and have classified them (and your buns) as direct materials.   You have classified your sole employee (Sam) as classified as direct labor. You have classified your condiments (catchup, mustard, onions…) as Variable Mfg. Overhead. You have classified your charcoal for your grill as fixed mfg. overhead. Sam gets a commission as an incentive to serve his customers well so that they return. You have classified this as Variable SG&A. Your Salary expense is your Only Fixed SG&A expense. Your Company Uses Periodic Inventory system. You calculate the Raw Hot Dogs Used. Your data set for three problems is shown below.

	Data A		Cost Classification / Your Notes
Last month you sold	1500	Grilled Hot Dogs	Revenue
Your total Sales were	$7,000		Revenue
Your plan is to sell Hot Dogs for	$ 5.00	Each	Revenue
Your plan for last month was to Sell	1200	Grilled Hot Dogs	Revenue
Your Total Cost for HD and Buns was	$1,500		Direct Materials
Your plan for HD & Bun Costs was	$ 2.20	per Hot Dog SOLD	Direct Materials
Sam Worked	200	Hours	Direct Labor
Sam was paid	$2,000		Direct Labor
Your plan is to pay Sam	$ 11.00	per hour	Direct Labor
Your plan is for Sam to work	250	Hours this month	Direct Labor
Your condiment spending plan	$0.220	per Hot Dog Sold	Variable Mfg. Overhead
You actually spent	$500	on Condiments	Variable Mfg. Overhead
Your plan for Sam's Commission is	$ 0.15	per Hot Dog SOLD	Variable SG&A
Last month Sam's Commission was	$ 200		Variable SG&A
Your plan for charcoal etc. was	$200		Fixed Mfg. Overhead
Your cost of charcoal etc. was	$270		Fixed Mfg. Overhead
Fixed Mfg. Overhead is APPLIED at a rate of	$ 0.20	per Hot Dog SOLD	Fixed Mfg. Overhead
Your plan for your salary last month was	$ 500		Fixed SG&A
Your paid yourself a salary of	$ 1,000		Fixed SG&A
You began the month with	100	Raw Hot Dogs	Raw Materials Inventory
You ended the month with	250	Raw Hot Dogs	Raw Materials Inventory
You bought	2000	Raw Hot Dogs	Raw Materials Inventory
Your plan was to buy	1.1	Raw Hot Dogs for Each Sold	Raw Materials Inventory
There are	100	Raw Hot Dogs per package	Raw Materials Inventory
Your plan was to pay	$ 10.00	Per package of Hot Dogs	Raw Materials Inventory
Total purchases were	$ 14,000	for Raw Hot Dogs	Raw Materials Inventory
When you counted inventory there were	350	Missing Raw Hot Dogs	Raw Materials Inventory

Complete the following Excel templates. Partial information from the data set is provided:

Full Costing vs. Variable Costing		**Template**				
Complete These Cells	Some are Blank					
Data A	Full	Full	Variable	Variable		
	Costing	Costing	Costing	Costing	Difference	
Units Sold	1	1,500	1	1,500		
Sales						
Direct Materials		$ 1,500		$ 1,500	$ -	
Direct Labor						
Variable Mfg OH		$ 500		$ 500		
Variable SG&A						
Total Variable Costs			$ 2.800			
Contribution Margin			$ 1.867	$ 2,800		
Fixed Mfg Overhead	$ 0.200					
Gross Profit		$ 2,700				
Variable SG&A		$ 200				
Fixed SG&A	NA		NA	$ 1,000		
Operating Income				$ 1,530		

Periodic Inventory of Hot Dogs			
Reconcilement			
Beginning Inventory		100	

Full Costing vs. Variable Costing			Solution				
Data A		Full	Full	Variable	Variable		
		Costing	Costing	Costing	Costing	Difference	
Units Sold		1	1,500	1	1,500	$	-
Sales	$	4.667	$ 7,000	$ 4.667	$ 7,000	$	-
Direct Materials	$	1.000	$ 1,500	$ 1.000	$ 1,500	$	-
Direct Labor	$	1.333	$ 2,000	$ 1.333	$ 2,000	$	-
Variable Mfg OH	$	0.333	$ 500	$ 0.333	$ 500	$	-
Variable SG&A				$ 0.133	$ 200		
Total Variable Costs				$ 2.800	$ 4,200		
Contribution Margin				$ 1.867	$ 2,800		
Fixed Mfg Overhead	$	0.200	$ 300		$ 270	$	(30)
Gross Profit	$	1.800	$ 2,700				
Variable SG&A	$	0.133	$ 200				
Fixed SG&A		NA	$ 1,000	NA	$ 1,000	$	-
Operating Income			$ 1,500		$ 1,530	$	30
Periodic Inventory of Hot Dogs							
Reconcilement							
Beginning Inventory			100				
Plus Hot Dogs Purchased			2,000				
Minus Hot Dogs Used			(1,850)				
= Ending Inventory			250				
Change in Inventory			150				
X Fixed Mfg OH Rate	$	0.20	$ 30	Absorbed (Released)			

Variable Overhead Variances Template

Variances / Calculations	Complete These Cells / Some are Blank 1	Final Answers Here 2 VOH $Cost / DLH	3	4 # of DLHours	5
Output = Hot Dogs Sold			Total Hot Dogs Used		Flexible Budget
Input Activity Applied = Direct Labor Hours	Actual Cost (Amount Spent)	(3-1) Variable Overhead Spending Variance	X Standard Cost of VOH Per Hot Dogs Sold	(5-3) Variable Overhead Efficiency Variance	Based on Outputs Standard Quantity of Input for Output X Std. Overhead Rate
Actual Output A=Data	1,500 A=Data		1,500 A=Data		1,500 A=Data
Master Budget Hot Dogs Sold					B=Data
Master Budget Direct Labor Hours					250 C=Data
Direct Labor Hours per Hot Dog	0.1333 D=H/A				0.2083 E=C/B
Total Direct Labor Hours	200 H=Data			113	F=AxE
Master Budget Variable Mfg Overhead Cost / Hot Dog Sold				$ 0.220 Data
Master Budget Variable Overhead Total Cost					G=Compute
VOH Cost per Direct Labor Hour	I=L/H	$ (1.180) J			$ 1.320 K=G/C
Total Variable Overhead Cost	$ 500 L=Data	<Enter#		M=K x E <Enter#	N=F x K

Final Hint

	Unfavorable Spending Variance	$ (88) Total Variance Unfavorable Use this Backwards	Favorable Efficiency Variance	

Steps: Fill in Known Data
Work Col. 1 & 5 first as much as you can
Pull Hot Dogs and Activity from Actual
  and Cost per Hot Dog/Activity to 3
Complete Working the Schedule

Variable Overhead Variances Solution

Variances / Calculations	1	2 VOH $Cost / DLH	3	4 # of DLHours	5
Output Boots = Hot Dogs Sold			Total Hot Dogs Used		Flexible Budget
Input Activity Applied = Direct Labor Hours	Actual Cost (Amount Spent)	(3-1) Variable Overhead Spending Variance	X Standard Cost of VOH Per Hot Dogs Sold	(5-3) Variable Overhead Efficiency Variance	Based on Outputs Standard Quantity of Input for Output X Std. Overhead Rate
Actual Output A=Data	1,500 A=Data		1,500 A=Data	1,500	A=Data
Master Budget Boots				1,200	B=Data
Master Budget Direct Labor Hours				250	C=Data
Direct Labor Hours per Hot Dog	0.1333 D=H/A		0.1333 D		0.2083 E=C/B
Total Direct Labor Hours	200 H=Data		200 H	113	313 F=AxE
Master Budget Variable Mfg Overhead Cost / Hot Dog Sold			$ 0.220 Data		
Master Budget Variable Overhead Total Cost			$ 330 G=DataXoutput		
VOH Cost per Direct Labor Hour	$ 2.500 I=L/H	J $ 1.320 K		$ 1.320 K=G/C
Total Variable Overhead Cost	$ 500 L=Data	$ (236) Unfavorable	$ 264 M=K x E	$ 149 Favorable	$ 413 N=F x K

Steps: Fill in Known Data
Work Col. 1 & 5 first as much as you can
Pull Boots and Activity from Actual
  and Cost per Boot/Activity to 3
Complete Working the Schedule

200 X $0 E x J Check of Result	-88 Total Variance Unfavorable	112.5 X $1.32 (F-H) x K Check of Result

Conclusion

        Connecting topics in Managerial Accounting by designing comprehensive review and assessment questions based the same given variables is important for the integration of learning. Two independently developed methodologies provide alternative approaches. In the first two examples, a comprehensive review problem provides a practical means to prepare for final assessment. In the third example, templates that have been previously reviewed provide structure and are applied in a comprehensive final assessment. While the pedagogical approach varies in these two examples, the goal is the same: Developing linkages between topics to advance learning and retention of Managerial Accounting.

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