CHAPTER 10

Budgetary Control and Responsibility Accounting

ANSWERS TO QUESTIONS

1. (a) Budgetary control is the use of budgets in controlling operations.
(b) The steps in budgetary control are:
(1) Develop the planned objectives (budget).
(2) Analyze differences between actual and budgeted results.
(3) Take corrective action.
(4) Modify future plans, if necessary.

LO1 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

2.

Purpose	Name of Report	Frequency	Primary Recipient(s)
(a)	Scrap	Daily	Production manager
(b)	Departmental overhead costs	Monthly	Department manager
(c)	Income statement	Monthly and Quarterly	Top management

LO1 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

3. The budget report for the second quarter can include year-to-date information as well as data for the second quarter.

LO1 BT: C Difficulty: Easy TOT: 1 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

4. There is no justification for Ken's concern. The sales budget is derived from the sales forecast and it represents management's best estimate of sales. Thus, it is a useful basis for evaluating sales performance.

LO1 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

5. A static budget is an appropriate basis for evaluating a manager's effectiveness in controlling costs when:
(1) The actual level of activity closely approximates the master budget activity level and/or
(2) The behavior of the costs in response to changes in activity is fixed.

LO1 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

6. Yes, this is true. A flexible budget is a series of static budgets at different levels of activity.

LO2 BT: C Difficulty: Easy TOT: 1 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

7. The performance is unfavorable. The budgeted indirect labor cost in the static budget is $1.35 per direct labor hour ($54,000 ÷ 40,000). At 45,000 direct labor hours, budgeted costs are $60,750 (45,000 x $1.35). Thus, indirect labor is $3,250 over budget ($64,000 – $60,750).

LO2 BT: AP Difficulty: Easy TOT: 3 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

8. The performance is favorable. At 50,000 direct labor hours, the budgeted cost is still $6,500. Thus, factory insurance is $200 under budget ($6,500 – $6,300).

LO2 BT: AN Difficulty: Easy TOT: 2 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

9. The steps in preparing a flexible budget are:
(1) Identify the activity index and the relevant range of activity.
(2) Identify the variable costs, and determine the budgeted variable cost per unit of activity for each cost.
(3) Identify the fixed costs, and determine the budgeted amount for each cost.

(4) Prepare the budget for selected increments of activity within the relevant range.

LO2 BT: K Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

10. Cali Company can say that total budgeted costs are $20,000 fixed plus $6.50 per direct labor hour [($85,000 – $20,000) ÷ 10,000].

LO2 BT: AP Difficulty: Easy TOT: 2 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

Questions Chapter 10 (Continued)

11. (a) At 9,000 hours, total budgeted costs are $86,000, or [$50,000 + ($4 x 9,000)].
(b) At 12,345 hours, total budgeted costs are $99,380, or [$50,000 + ($4 x 12,345)].

LO2 BT: AP Difficulty: Easy TOT: 3 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Budget Preparation

12. Management by exception means that top management's review of a budget report is focused either entirely or primarily on differences between actual results and planned objectives. The criteria for identifying exceptions are materiality and controllability of the item.

LO3 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

13. Responsibility accounting is a method of controlling operations that involves identifying, accumulating, and reporting costs (and revenues, where relevant) on the basis of the manager who has the authority to make the day-to-day decisions about the items. The purpose of responsibility accounting is to evaluate a manager's performance on the basis of matters directly under that manager's control.

LO3 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

14. Eve should know that the following conditions contribute to the effective use of responsibility accounting:
(1) Costs and revenues can be directly associated with the specific level of management responsibility.
(2) The costs and revenues are controllable at the level of responsibility with which they are associated.
(3) Budget data can be developed for evaluating the manager's effectiveness in controlling the costs and revenues.

LO3 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

15. A cost is controllable at a given level of managerial responsibility if the manager has the power to incur the cost within a given period of time. Most costs incurred directly are controllable, whereas costs incurred indirectly and allocated to a responsibility level are noncontrollable at that level.

LO3 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

16. Responsibility reports differ from budget reports in two respects: (1) a distinction is made between controllable and noncontrollable items and (2) responsibility reports either emphasize, or only include, items controllable by the individual manager.

LO3 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

17. Usually there is a relationship between a responsibility reporting system and a company's organization chart. In a responsibility reporting system, reports are prepared for each level of responsibility in the organization chart.

LO3 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

18. There are three types of responsibility centers:
(a) A **cost center** incurs costs (and expenses) but does not directly generate revenues.
(b) A **profit center** incurs costs (and expenses) and also generates revenues.
(c) An **investment center** incurs costs (and expenses), generates revenues, and has control over decisions regarding the assets available for use.

LO3 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

19. (a) Only controllable costs are included in a performance report for a cost center.
(b) No distinction is made between variable and fixed costs.

LO3 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

Questions Chapter 10 (Continued)

20. Direct fixed costs relate specifically to one responsibility center and are incurred for the sole benefit of that center. An indirect fixed cost relates to the company's overall activities and is incurred for the benefit of more than one profit center. Both types of fixed costs are controllable. A direct fixed cost is controllable by a specific center manager and an indirect fixed cost is controllable by a manager higher up in the organization.
LO3 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

21. Controllable margin is contribution margin less controllable fixed costs in a profit center. The purpose of controllable margin is to provide a basis for evaluating the manager's effectiveness in controlling revenues and costs.
LO3 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

22. The primary basis for evaluating the performance of the manager of an investment center is return on investment (ROI). The equation is: Controllable Margin divided by Average Operating Assets.
LO4 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

23. ROI can be improved by: (1) increasing controllable margin and (2) reducing average operating assets. Controllable margin can be increased by increasing sales or by reducing variable and controllable fixed costs.
LO4 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

24. (a) The manager being evaluated should have direct input into the process of establishing budget goals and have the opportunity to respond to the evaluation. (b) Top management should make the evaluation entirely on matters controllable by the manager, and should fully support the evaluation process.
LO3 BT: C Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

***25.** ROI fails to indicate the dollar amount of change in residual income. That is, a positive increase in residual income may result from a project that is rejected because of its negative effect on ROI, even though the project's ROI is greater than the company's minimum rate of return.
LO5 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

***26.** Residual income is the income that remains after subtracting from the controllable margin the minimum rate of return on a company's average operating assets. Residual income as a performance measure ignores the amount of difference in investments (average operating assets) by concentrating only on the amount of additional residual income.
LO5 BT: K Difficulty: Easy TOT: 4 min. AACSB: None AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

SOLUTIONS TO EXERCISES

LO2 BT: AP Difficulty: Easy TOT: 6 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Management

EXERCISE 10.6

(a)

FALLON COMPANY
Selling Expense Flexible Budget Report
For the Month Ended March 31, 2022

	Budget	Actual	Difference Favorable F / Unfavorable U
Sales	$170,000	$170,000	
Variable expenses			
Sales commissions	$ 10,200	$ 11,000	$800 U
Advertising	6,800	6,900	100 U
Travel	5,100	5,100	0
Delivery	3,400	3,450	50 U
Total variable expenses	25,500	26,450	950 U
Fixed expenses			
Sales salaries	35,000	35,000	0
Depreciation	7,000	7,000	0
Insurance	1,000	1,000	0
Total fixed expenses	43,000	43,000	0
Total expenses	$ 68,500	$ 69,450	$950 U

EXERCISE 10.6 (Continued)

(b)

FALLON COMPANY
Selling Expense Flexible Budget Report
For the Month Ended March 31, 2022

	Budget	Actual	Difference Favorable F / Unfavorable U
Sales	**$180,000**	**$180,000**	
Variable expenses			
Sales commissions	**$ 10,800**	**$ 11,000**	**$200 U**
Advertising	**7,200**	**6,900**	**300 F**
Travel	**5,400**	**5,100**	**300 F**
Delivery	**3,600**	**3,450**	**150 F**
Total variable expenses	**27,000**	**26,450**	**550 F**
Fixed expenses			
Sales salaries	**35,000**	**35,000**	**0**
Depreciation	**7,000**	**7,000**	**0**
Insurance	**1,000**	**1,000**	**0**
Total fixed expenses	**43,000**	**43,000**	**0**
Total expenses	**$ 70,000**	**$ 69,450**	**$550 F**

[(Sales comm.: ($180,000 x 6%) - $11,000 = $200U); (Advert.: ($180,000 x 4%) - $6,900 = $300F); (Travel: ($180,000 x 3%) - $5,100 = $300F); (Del.: ($180,000 x 2%) - $3,450 = $150F); (Tot. var. exp.: $27,000 - $26,450 = $550F);(Sales sal.: ($35,000 - $35,000 = $0); (Depr.: ($7,000 - $7,000) = $0); (Ins.: ($1,000 - $1,000) = $0); (Tot. fix. exp.: $43,000 - $43,000 = $0); (Tot. exp.: $70,000 - $69,450 = $550F)]
[(Sales comm.: (Act. Sales x Sales comm. %) – Act. sales comm. = Unfav. diff.); (Advert.: (Act. sales x Advert. %) – Act. advert. = Fav. diff.); (Travel: (Act. sales x Travel %) – Act. travel = Fav. diff.); (Del.: (Act. sales x Del. %) – Act. del. = Fav. diff.);(Bud. tot. var. exp. – Act. var. exp. = Fav. diff.); (Sales sal.: (Bud. sales sal. – Act. sales sal.) = No diff.); (Depr.: (Bud. depr. – Act. depr.) = No diff.); (Ins.: (Bud. ins. – Act. ins.) = No diff.); (Bud. tot. fix. exp. – Act. tot. fix. exp. = No diff.);(Bud. tot. exp. – Act. tot. exp. = Fav. diff.)]

(c) Flexible budgets are essential in evaluating a manager's performance in controlling variable expenses because the budget allowance varies directly with changes in the activity index. At $170,000 of sales, the manager was over budget (unfavorable) by $950 but at $180,000 of sales, the manager was under budget (favorable) by $550.

LO2 BT: AN Difficulty: Easy TOT: 15 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Management

EXERCISE 10.7

(a)

APPLIANCE POSSIBLE INC.
Flexible Production Cost Budget

Activity level Production levels	90,000	100,000	110,000
Variable costs:			
Manufacturing ($6)	$ 540,000	$ 600,000	$ 660,000
Administrative ($4)	360,000	400,000	440,000
Selling ($3)	270,000	300,000	330,000
Total variable costs ($13)	1,170,000	1,300,000	1,430,000
Fixed costs:			
Manufacturing	160,000	160,000	160,000
Administrative	80,000	80,000	80,000
Total fixed costs	240,000	240,000	240,000
Total costs	$1,410,000	$1,540,000	$1,670,000

(b) Let (X) represent number of units
Sales price(X) = Variable costs(X) + Fixed costs + Profit
Sales price(X) = Variable costs(X) + $240,000 + $60,000
(Sales price – Variable costs)(X) = $300,000
($16 – $13)(X) = $300,000
$3(X) = $300,000
X = 100,000 units to be sold

[($240,000 + $60,000) ÷ ($16 - $13) = 100,000]
[(FC + Target net inc.) ÷ (USP – UVC) = Targeted units]
LO2 BT: AP Difficulty: Easy TOT: 10 min. AACSB: Analytic AICPA FC: Reporting IMA: Budget Preparation

EXERCISE 10.8

(a)

RENSING GROOMERS
Flexible Budget

Activity level Direct labor hours	550	600	700
Variable costs:			
Grooming supplies ($5)	$ 2,750	$ 3,000	$ 3,500
Direct labor ($14)	7,700	8,400	9,800
Overhead ($1)	550	600	700
Total variable costs ($20)	11,000	12,000	14,000
Fixed costs:			
Overhead	10,000	10,000	10,000
Total fixed costs	10,000	10,000	10,000
Total costs	$21,000	$22,000	$24,000

(b) A flexible budget presents expected costs at various levels of production volume, not just one, so that comparisons can be made between actual costs and budgeted costs at the same volume. This allows the manager to determine whether a difference between the actual results and budget is due to better or worse cost control than expected or due to achieving a different volume than that upon which the static budget was predicated.

(c) $21,000 ÷ 550 = $38.18
$22,000 ÷ 600 = $36.67
$24,000 ÷ 700 = $34.29

(d) Cost formula is $10,000 + $20(X), where (X) = direct labor hours
Total cost = $10,000 + ($20 x 650) = $23,000.
Number of clients = 650 hrs ÷ 1.30 hrs/client = 500
Cost per client = $23,000 ÷ 500 = $46.00
Charge per client = $46.00 x 1.40 = $64.40

[($10,000 + ($20 x 650) = $23,000); (650 ÷ 1.30 = 500); ($23,000 ÷ 500 = $46.00); ($46.00 x 140% = $64.40)]
[(FC + (UVC/DLH x No. DLH) = Tot. cost); (No. DLH ÷ DLH/client = No. of clients); (Tot. cost ÷ No. of clients = Cost/client); (Cost/client x Sales markup % = Chrg./client)]
LO1, 2 BT: E Difficulty: Easy TOT: 15 min. AACSB: Analytic AICPA FC: Reporting IMA: Budget Preparation

EXERCISE 10.9

(a)

SORIA COMPANY
Selling Expense Flexible Budget Report
Clothing Department
For the Month Ended October 31, 2022

	Budget	Actual	Difference Favorable F / Unfavorable U
Sales in units	10,000	10,000	
Variable expenses			
Sales commissions ($0.30)	$ 3,000	$ 2,600	$ 400 F
Advertising expense ($0.09)	900	850	50 F
Travel expense ($0.45)	4,500	4,100	400 F
Free samples ($0.20)	2,000	1,400	600 F
Total variable expenses ($1.04)	10,400	8,950	1,450 F
Fixed expenses			
Rent	1,500	1,500	0
Sales salaries	1,200	1,200	0
Office salaries	800	800	0
Depreciation—sale staff autos	500	500	0
Total fixed expenses	4,000	4,000	0
Total expenses	$14,400	$12,950	$1,450 F

[(Sales comm.: (($2,400 ÷ 8,000) x 10,000) - $2,600 = $400F); (Advert.: (($720 ÷ 8,000) x 10,000) - $850 = $50F); (Travel: (($3,600 ÷ 8,000) x 10,000) - $4,100 = $400F); (Free samples: (($1,600 ÷ 8,000) x 10,000) - $1,400 = $600F); (Rent: ($1,500 – $1,500) = $0); (Sales sal.: ($1,200 - $1,200) = $0); (Off. sal.: ($800 - $800) = $0); (Depr.: ($500 - $500) = $0)]
[(Sales comm.: ((Static bud. amt. ÷ Static bud. units) x Act. units) – Act. sales comm. = Fav. diff.); (Advert.: ((Static bud. amt. ÷ Static bud. units) x Act. units) – Act. advert. =Fav. diff.); (Travel: ((Static bud. amt. ÷ Static bud. units) x Act. units) – Act. travel = Fav. diff.); (Free samples: ((Static bud. amt. ÷ Static bud. units) x Act. units) – Act. free samples = Fav. diff.); (Rent: (Bud. rent – Act. rent) = No diff.); (Sales sal.: (Bud. sales sal. – Act. sales sal.) = No diff.); (Off. sal.: (Bud. off. sal. – Act. off. sal.) = No diff.); (Depr. : (Bud. depr. – Act. depr.) = No diff.)]

(b) No, Joe should not have been reprimanded. As shown in the flexible budget report, variable costs were $1,450 below budget.

LO1, 2 BT: E Difficulty: Easy TOT: 7 min. AACSB: Analytic AICPA FC: Reporting IMA: Budget Preparation

EXERCISE 10.10

(a)

CHUBBS INC.
Manufacturing Overhead Flexible Budget Report
For the Quarter Ended March 31, 2022

	Budget	Actual	Difference Favorable F Unfavorable U
Variable costs			
Indirect materials	$12,000	$13,500	$1,500 U
Indirect labor	10,000	9,500	500 F
Utilities	8,000	8,700	700 U
Maintenance	6,000	5,000	1,000 F
Total variable costs	36,000	36,700	700 U
Fixed costs			
Supervisory salaries	36,000	36,000	0
Depreciation	7,000	7,000	0
Property taxes and insurance	8,000	8,300	300 U
Maintenance	5,000	5,000	0
Total fixed costs	56,000	56,300	300 U
Total costs	$92,000	$93,000	$1,000 U

(b)

CHUBBS INC.
Manufacturing Overhead Responsibility Report
For the Quarter Ended March 31, 2022

Controllable Costs	Budget	Actual	Difference Favorable F Unfavorable U
Indirect materials	$12,000	$13,500	$1,500 U
Indirect labor	10,000	9,500	500 F
Utilities	8,000	8,700	700 U
Maintenance*	11,000	10,000	1,000 F
Supervisory salaries	36,000	36,000	0
	$77,000	$77,700	$ 700 U

***Includes variable and fixed costs**

[(Ind. mat.: $12,000 - $13,500 = $1,500U); (Ind. labor: $10,000 - $9,500 = $500F); (Util.: $8,000 - $8,700 = $700U); (Maint.: ($6,000 + $5,000) – ($5,000 + $5,000) = $1,000F); (Super. sal.: $36,000 - $36,000 = $0)]

EXERCISE 10.10 (Continued)

[(Ind. mat.: Bud. amt. – Act. amt. = Unfav. diff.); (Ind. labor: Bud. amt. – Act. amt. = Fav. diff.);(Util.: Bud. amt. – Act. amt. = Unfav. diff.); (Maint.: (Bud. VC + Bud. FC) – (Act. VC + Act. FC) = Fav. diff.);(Super. sal.: Bud. amt. Act. amt. = No diff.)]
LO2, 3 BT: AP Difficulty: Easy TOT: 10 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

EXERCISE 10.11

(a)

URLINK COMPANY
Home Internet Service Segment
Responsibility Report
For the Quarter Ended March 31, 2022

	Budget	Actual	Difference Favorable F Unfavorable U
Service revenue	**$25,000**	**$26,200**	**$1,200 F**
Variable costs:			
Material and supplies	**1,600**	**1,200**	**400 F**
Wages	**3,000**	**3,250**	**250 U**
Gas and oil	**2,800**	**3,400**	**600 U**
Total variable costs	**7,400**	**7,850**	**450 U**
Contribution margin	**17,600**	**18,350**	**750 F**
Controllable fixed costs:			
Supervisory salaries	**9,000**	**9,500**	**500 U**
Insurance	**4,000**	**3,900**	**100 F**
Equipment depreciation	**1,500**	**1,300**	**200 F**
Total controllable fixed costs	**14,500**	**14,700**	**200 U**
Controllable margin	**$ 3,100**	**$ 3,650**	**$ 550 F**

[($1,200F + ($400F - $250U - $600U) = $750F); ($750F + (-$500U + $100F + $200F) = $550F)]
[(Serv. rev. fav. diff. + (Mat. & supp. fav. diff. – Wages unfav. diff. – Gas & oil unfav. diff.) = CM fav. diff.); (CM fav. diff. + (-Super. sal. unfav. diff. + Ins. fav. diff. + Equip. depr. fav. diff.) = Control. margin fav. diff.)]

EXERCISE 10.13

(a) To Dallas Department Manager—Finishing **Month: July**

Controllable Costs:	Budget	Actual	Fav/Unfav
Direct Materials	$ 44,000	$ 42,500	$1,500 F
Direct Labor	82,000	83,400	1,400 U
Manufacturing Overhead	49,200	51,000	1,800 U
Total	$175,200	$176,900	$1,700 U

(b) To Assembly Factory Manager—Dallas **Month: July**

Controllable Costs:	Budget	Actual	Fav/Unfav
Dallas Office	$ 92,000	$ 95,000	$3,000 U
Departments:			
Machining	219,000	220,000	1,000 U
Finishing	175,200	176,900	1,700 U
Total	$486,200	$491,900	$5,700 U

[(Off.: $92,000 - $95,000 = $3,000U); (Mach.: $219,000 - $220,000 = $1,000U); (Fin.: ($44,000 + $82,000 + $49,200) – ($42,500 + $83,400 + $51,000) = $1,700U)]
[(Off.: Off. bud. – Act. bud. = Unfav. diff.); (Mach.: Mach. bud. – Mach. act. = Unfav. diff.); (Fin.: Bud. DM + Bud. DL + Bud. VOH) – (Act. DM + Act. DL + Act. VOH) = Unfav. diff.)]

(c) To Vice President—Production **Month: July**

Controllable Costs:	Budget	Actual	Fav/Unfav
V P Production	$ 130,000	$ 132,000	$2,000 U
Assembly factories:			
Atlanta	420,000	424,000	4,000 U
Dallas	486,200	491,900	5,700 U
Tucson	496,500	494,200	2,300 F
Total	$1,532,700	$1,542,100	$9,400 U

LO3 BT: AP Difficulty: Easy TOT: 12 AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

EXERCISE 10.14

(a)

MALONE COMPANY
Mixing Department
Responsibility Report
For the Month Ended January 31, 2022

Controllable Cost	Budget	Actual	Difference
Indirect labor	$12,000	$12,250	$ 250 U
Indirect materials	7,700	10,200	2,500 U
Lubricants	1,675	1,650	25 F
Maintenance	3,500	3,500	-0-
Utilities	5,000	6,400	1,400 U
	$29,875	$34,000	$4,125 U

(b) Most likely, when management examined the responsibility report for January, they would determine that the differences were insignificant for indirect labor 2.1% of budget ($250 ÷ $12,000), lubricants 1.5% ($25 ÷ $1,675), and maintenance 0% and require no action. However, the differences for indirect materials 32.5% ($2,500 ÷ $7,700) and utilities 28% ($1,400 ÷ $5,000) would cause management to investigate further. As a result of their investigation, management would either take corrective action or modify the budgeted amounts for future months to reflect changing conditions.

LO3 BT: AN Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

EXERCISE 10.15

(a)	**1.**	**Controllable margin ($270,000 – $100,000)**	**$170,000**
	2.	**Variable costs ($600,000 – $270,000)**	**330,000**
	3.	**Contribution margin ($450,000 – $320,000)**	**130,000**
	4.	**Controllable fixed costs ($130,000 – $90,000)**	**40,000**
	5.	**Controllable fixed costs ($180,000 – $95,000)**	**85,000**
	6.	**Sales ($250,000 + $180,000)**	**430,000**

[(Women's: ($270,000 - $100,000 = $170,000); ($600,000 - $270,000 = $330,000)); (Men's: ($450,000 - $320,000 = $130,000); ($130,000 - $90,000 = $40,000)); (Children's: ($180,000 - $95,000 = $85,000); ($250,000 + $180,000 = $430,000))]

[(Women's: (CM – Control. FC = Control. margin); (Sales – CM = VC)); (Men's: (Sales – VC = CM); (CM – Control. Margin = Control. FC)); (Children's: (CM – Control. margin = Control. FC); (VC + CM = Sales))]

EXERCISE 10.15 (Continued)

(b)

HORATIO INC.
Women's Shoe Division
Responsibility Report
For the Month Ended June 30, 2022

	Budget	Actual	Difference Favorable F Unfavorable U
Sales	$600,000	$600,000	$ 0
Variable costs	325,000	330,000	5,000 U
Contribution margin	275,000	270,000	5,000 U
Controllable fixed costs	100,000	100,000	0
Controllable margin	$175,000	$170,000	$5,000 U

LO3 BT: AN Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

EXERCISE 10.16

(a)

HARRINGTON COMPANY
Sports Equipment Division
Responsibility Report
For the Year Ended December 31, 2022

	Budget	Actual	Difference
Sales	$900,000	$880,000	$20,000 U
Variable costs			
Cost of goods sold	440,000	408,000	32,000 F
Selling and administrative	60,000	61,000	1,000 U
Total	500,000	469,000	31,000 F
Contribution margin	400,000	411,000	11,000 F
Controllable fixed costs			
Cost of goods sold	100,000	105,000	5,000 U
Selling and administrative	90,000	66,000	24,000 F
Total	190,000	171,000	19,000 F
Controllable margin	$210,000	$240,000	$30,000 F

(b) ($240,000 – $90,000)/$1,000,000 = 15%
[($240,000 - $90,000) ÷ $1,000,000 = 15%]
[(Act. control. margin – Noncontrol. FC) ÷ Ave. oper. assets = ROI]
LO3, 4 BT: AP Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

EXERCISE 10.17

(a) Controllable margin = ($3,000,000 – $1,950,000 – $600,000) = $450,000
ROI = $450,000 ÷ $5,000,000 = 9%

(b) 1. Contribution margin percentage is 35%, or ($1,050,000 ÷ $3,000,000)
Increase in controllable margin = $300,000 x 35% = $105,000
ROI = ($450,000 + $105,000) ÷ $5,000,000 = 11.1%

[($1,050,000 ÷ $3,000,000 = 35%); ($300,000 x 35% = $105,000); (($405,000 + $105,000) ÷ $5,000,000 = 11.1%)]
[((Sales - VC) ÷ Sales = CM %); (Sales incr. x CM % = Incr. in control. margin); (Control. margin + Incr. in control. margin) ÷ Ave. oper. assets = ROI)]

2. ($450,000 + $150,000) ÷ $5,000,000 = 12%

[($450,000 + $150,000) ÷ $5,000,000 = 12%]
[(Control. margin + Decr. in VC) ÷ Ave. oper. assets = ROI]

3. $450,000 ÷ ($5,000,000 – ($5,000,000 x 6.25%)) = 9.6%

[$450,000 ÷ ($5,000,000 – ($5,000,000 x 6.25%)) = 9.6%]
[Control. margin ÷ (Ave. oper. assets – Decr.)]
LO4 BT: AP Difficulty: Easy TOT: 10 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

EXERCISE 10.18

(a)

DINKLE AND FRIZELL DENTAL CLINIC
Preventive Services
Responsibility Report
For the Month Ended May 31, 2022

	Budget	Actual	Difference Favorable F Unfavorable U
Service revenue	$39,000	$40,000	$1,000 F
Variable costs			
Filling materials	4,900	5,000	100 U
Novocain	3,800	3,900	100 U
Dental assistant wages	2,500	2,500	0
Supplies	2,250	1,900	350 F
Utilities	390	500	110 U
Total variable costs	13,840	13,800	40 F
Contribution margin	25,160	26,200	1,040 F
Controllable fixed costs			
Dentist salary	9,400	9,800	400 U
Equipment depreciation	6,000	6,000	0
Total controllable fixed costs	15,400	15,800	400 U
Controllable margin	$ 9,760	$10,400	$ 640 F
Return on investment*	12.2%	13.0%	0.8% F

***Average investment = ($82,400 + $77,600) ÷ 2 = $80,000**
Budget ROI = $9,760 ÷ $80,000
Actual ROI = $10,400 ÷ $80,000
ROI Difference = $640 ÷ $80,000

[(Bud.: $9,760 ÷ (($82,400 + $77,600) ÷ 2) = 12.2%); (Act.: $10,400 ÷ (($82,400 + $77,600) ÷ 2) = 13.0%); (Diff.: 12.2% - 13.0% = 0.8%F)]
[(Bud.: Control. margin ÷ ((Beg. oper. assets + End. oper. assets) ÷ 2) = ROI); (Act.: Control. margin ÷ ((Beg. oper. assets + End. oper. assets) ÷ 2) = ROI); (Bud. ROI – Act. ROI = Fav. diff.)]

EXERCISE 10.19

Planes:

ROI = Controllable margin ÷ Average operating assets
12%= Controllable margin ÷ $25,000,000
Controllable margin = $25,000,000 x 12%
= $3,000,000

Contribution margin = Controllable margin + Controllable fixed costs
= $3,000,000 + $1,500,000
= $4,500,000

Service revenue = Contribution margin + Variable costs
= $4,500,000 + $5,500,000
= $10,000,000

[($25,000,000 x 12% = $3,000,000); ($3,000,000 + $1,500,000 = $4,500,000); ($4,500,000 + $5,500,000 = $10,000,000)]
[(Ave. oper. assets x ROI = Control. margin); (Control. margin + Control. FC = CM); (CM + VC = Serv. rev.)]

Taxis:

ROI = Controllable margin ÷ Average operating assets
10%= $80,000 ÷ Average operating assets
Average operating assets = $80,000 ÷ 10%
= $800,000

Controllable margin = Contribution margin – Controllable fixed costs
$80,000 = $250,000 – Controllable fixed costs
Controllable fixed costs = $250,000 – $80,000
= $170,000

Contribution margin = Service revenue – Variable costs
$250,000 = $500,000 – Variable costs
Variable costs = $500,000 – $250,000
= $250,000

[($80,000 ÷ 10% = $800,000); ($250,000 - $80,000 = $170,000); ($500,000 - $250,000 = $250,000)]
[(Control. margin ÷ ROI = Ave. oper. assets); (CM – Control. margin = Control. FC); (Serv. rev. – CM = VC)]

EXERCISE 10.19 (Continued)

Limos:

ROI = Controllable margin ÷ Average operating assets
= $210,000 ÷ $1,500,000
= 14%

Controllable margin	**=**	**Contribution margin**	**–**	**Controllable fixed costs**
$210,000	**=**	**$480,000**	**–**	**Controllable fixed costs**
Controllable fixed costs			**=**	**$480,000 – $210,000**
			=	**$270,000**

Contribution margin	**=**	**Service revenue**	**– Variable costs**
$480,000	**=**	**Service revenue**	**– $300,000**
Service revenue	**=**	**$480,000 + $300,000**	
	=	**$780,000**	

[($210,000 ÷ $1,500,000 = 14%); ($480,000 - $210,000 = $270,000); ($480,000 + $300,000 = $780,000)]
[(Control. margin ÷ Ave. oper. assets = ROI); (CM – Control. margin = Control. FC); (CM + VC = Serv. Rev.)]
LO4 BT: AN Difficulty: Moderate TOT: 25 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

***EXERCISE 10.20**

(a) North Division: ROI = $140,000 ÷ $1,000,000 = 14%
West Division: ROI = $360,000 ÷ $2,000,000 = 18%
South Division: ROI = $210,000 ÷ $1,500,000 = 14%

(b) North Division:
Residual Income = $140,000 – (.13 x $1,000,000) = $10,000

West Division:
Residual Income = $360,000 – (.16 x $2,000,000) = $40,000

South Division:
Residual Income = $210,000 – (.10 x $1,500,000) = $60,000

*EXERCISE 10.20 (Continued)

(c) 1. If ROI is used to measure performance, only the North Division (with a 14% ROI) and the South Division (with a 14% ROI) would make the additional investment that provides a 16% ROI. The West Division presently earns an 18% return ($360,000 ÷ $2,000,000), and therefore would decline the investment.

2. If residual income is used to measure performance, all three divisions would probably make the additional investment because each would realize an increase in residual income.

LO5 BT: AN Difficulty: Moderate TOT: 20 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

*EXERCISE 10.21

(a)

ROI	**=**	**Controllable margin**	**÷**	**Average operating assets**
16%	**=**	**$200,000**	**÷**	**Average operating assets**
Average operating assets =		**$1,250,000**		

(b)

Controllable margin	**–**	**(Minimum rate of return x Average operating assets)**	**=**	**Residual income**
$200,000	**–**	**(Minimum rate of return x $1,250,000)**	**=**	**$100,000**
$100,000	**=**	**Minimum rate of return x $1,250,000**		
Minimum rate of return	**=**	**8%**		

(c)

Controllable margin	**–**	**(Minimum rate of return x Average operating assets)**	**=**	**Residual income**
Controllable margin	**–**	**(11% x $1,200,000)**	**=**	**$156,000**
Controllable margin	**=**	**$288,000**		

(d)

ROI	**=**	**Controllable margin**	**÷**	**Average operating assets**
24%	**=**	**$288,000**	**÷**	**$1,200,000**

LO5 BT: AN Difficulty: Moderate TOT: 20 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement

SOLUTIONS TO PROBLEMS

PROBLEM 10.1

(a)

BUMBLEBEE COMPANY
Packaging Department
Monthly Manufacturing Overhead Flexible Budget
For the Year 2022

Activity level				
Direct labor hours	**27,000**	**30,000**	**33,000**	**36,000**
Variable costs				
Indirect labor ($0.42)*	**$11,340**	**$12,600**	**$13,860**	**$15,120**
Indirect materials ($0.30)	**8,100**	**9,000**	**9,900**	**10,800**
Repairs ($0.23)	**6,210**	**6,900**	**7,590**	**8,280**
Utilities ($0.24)	**6,480**	**7,200**	**7,920**	**8,640**
Lubricants ($0.06)	**1,620**	**1,800**	**1,980**	**2,160**
Total variable costs ($1.25)	**33,750**	**37,500**	**41,250**	**45,000**
Fixed costs				
Supervision**	**8,000**	**8,000**	**8,000**	**8,000**
Depreciation	**6,000**	**6,000**	**6,000**	**6,000**
Insurance	**2,500**	**2,500**	**2,500**	**2,500**
Rent	**2,000**	**2,000**	**2,000**	**2,000**
Property taxes	**1,500**	**1,500**	**1,500**	**1,500**
Total fixed costs	**20,000**	**20,000**	**20,000**	**20,000**
Total costs	**$53,750**	**$57,500**	**$61,250**	**$65,000**

***$126,000/300,000**
****$96,000/12**
[($375,000 ÷ 300,000 = $1.25); ($240,000 ÷ 12 = $20,000)]
[(Bud. ann. VC ÷ Bud. DLH = VC/DLH); (Bud. ann. FC ÷ No. mos. in a yr. = FC/mo.)]

PROBLEM 10.1 (Continued)

(b)

BUMBLEBEE COMPANY
Packaging Department
Manufacturing Overhead Flexible Budget Report
For the Month Ended October 31, 2022

Direct labor hours (DLH)	Budget at 27,000 DLH	Actual Costs 27,000 DLH	Difference Favorable F Unfavorable U
Variable costs			
Indirect labor	$11,340	$12,432	$1,092 U
Indirect materials	8,100	7,680	420 F
Repairs	6,210	6,100	110 F
Utilities	6,480	6,840	360 U
Lubricants	1,620	1,920	300 U
Total variable costs	33,750	34,972	1,222 U
Fixed costs			
Supervision	8,000	8,000	0
Depreciation	6,000	6,000	0
Insurance	2,500	2,460	40 F
Rent	2,000	2,000	0
Property taxes	1,500	1,500	0
Total fixed costs	20,000	19,960	40 F
Total costs	$53,750	$54,932	$1,182 U

[(Ind. Labor: $11,340 - $12,432 = $1,092U); (Ind. Mat.: $8,100 - $7,680 = $420F); (Repairs: $6,210 - $6,100 = $110F); (Util.: $6,480 - $6,840 = $360U); (Lub.: $1,620 - $1,920 = $300U); (Ins.: $2,500 - $2,460 = $40F)]
[(Ind. labor: (Bud. amt. – Act. amt. = Unfav. diff.); (Ind. mat.: Bud. amt. – Act. amt. = Fav. diff.); (Repairs: Bud. amt. – Act. amt. = Fav. diff.); (Util.: Bud. amt. – Act. amt. = Unfav. diff.); (Lub.: Bud. amt. – Act. amt. = Unfav. diff.); (Ins.: Bud. amt. – Act. amt. = Fav. diff.)]

(c) The overall performance of management was slightly unfavorable. However, none of the unfavorable differences exceeded 10% of budget except for lubricants 18.5% ($300 ÷ $1,620).

LO2 BT: AN Difficulty: Easy TOT: 30 min. AACSB: Analytic AICPA FC: Reporting IMA: Budget Preparation, Performance Measurement

PROBLEM 10.3

(a) The equation is fixed costs $35,000 plus variable costs of $2.85 per unit ($171,000 ÷ 60,000 units).

(b)

RATCHET COMPANY
Assembling Department
Flexible Budget Report
For the Month Ended August 31, 2022

Units	Budget at 58,000 Units	Actual Costs 58,000 Units	Difference Favorable F Unfavorable U
Variable costs*			
Direct materials ($0.80 x 58,000)	$ 46,400	$ 47,000	$ 600 U
Direct labor ($0.90 x 58,000)	52,200	51,200	1,000 F
Indirect materials ($0.40 x 58,000)	23,200	24,200	1,000 U
Indirect labor ($0.30 x 58,000)	17,400	17,500	100 U
Utilities ($0.25 x 58,000)	14,500	14,900	400 U
Maintenance ($0.20 x 58,000)	11,600	12,400	800 U
Total variable ($2.85 x 58,000)	165,300	167,200	1,900 U
Fixed costs			
Rent	12,000	12,000	0
Supervision	17,000	17,000	0
Depreciation	6,000	6,000	0
Total fixed	35,000	35,000	0
Total costs	$200,300	$202,200	$1,900 U

***The per unit variable costs are computed by taking the budget amount at 60,000 units and dividing it by 60,000. For example, direct materials per unit is therefore $0.80 or $\frac{\$48,000}{60,000}$.**

This report provides a better basis for evaluating performance because the budget is based on the level of activity actually achieved.

[(DM: $48,000 ÷ 60,000 = $.80); (DL: $54,000 ÷ 60,000 = $.90); (Ind. mat.: $24,000 ÷ 60,000 = $.40); (Ind. labor: $18,000 ÷ 60,000 = $.30); (Util.: $15,000 ÷ 60,000 = $.25); (Maint.: ($12,000 ÷ 60,000 = $.20)]
[(DM: Static bud. amt. ÷ Bud. units = DM/unit); (DL: Static bud. amt. ÷ Bud. units = DL/unit); (Ind. mat.: Static bud. amt. ÷ Bud. units = Ind. mat./unit); (Ind. labor: Static bud. amt. ÷ Bud. units = Ind. labor/unit); (Util.: Static bud. amt. ÷ Bud. units = Util./unit); (Maint.: Static bud. amt. ÷ Bud. units = Maint./unit)]

(c)

RATCHET COMPANY
Assembling Department
Flexible Budget Report
For the Month Ended September 30, 2022

Units	Budget at 64,000 Units	Actual Costs 64,000 Units	Difference Favorable F Unfavorable U
Variable costs			
Direct materials ($0.80 x 64,000)	$ 51,200	$ 51,700	$ 500 U
Direct labor ($0.90 x 64,000)	57,600	56,320	1,280 F
Indirect materials ($0.40 x 64,000)	25,600	26,620	1,020 U
Indirect labor ($0.30 x 64,000)	19,200	19,250	50 U
Utilities ($0.25 x 64,000)	16,000	16,390	390 U
Maintenance ($0.20 x 64,000)	12,800	13,640	840 U
Total variable costs	182,400	183,920	1,520 U
Fixed costs	12,000	12,000	0
Rent	17,000	17,000	0
Supervision	6,000	6,000	0
Depreciation	35,000	35,000	0
Total fixed costs	$217,400	$218,920	$1,520 U
Total costs			

Note that actual variable costs in September were 10% higher than the actual variable costs in August. Therefore, to find the actual variable costs in September, the actual variable costs in August must be increased 10% as follows:

PROBLEM 10.3 (Continued)

	August (actual)		September (actual)
Direct materials	**$ 47,000 x 110%**	**=**	**$ 51,700**
Direct labor	**51,200 x 110%**		**56,320**
Indirect materials	**24,200 x 110%**		**26,620**
Indirect labor	**17,500 x 110%**		**19,250**
Utilities	**14,900 x 110%**		**16,390**
Maintenance	**12,400 x 110%**		**13,640**
	$167,200		**$183,920**

[(DM: ($.80 x 64,000) – ($47,000 x 110%) = $500U); (DL: ($.90 x 64,000) – ($51,200 x 110%) = $1,280F); (Ind. mat.: ($.40 x 64,000) – ($24,200 x 110%) = $1,020U); (Ind. labor: ($.30 x 64,000) – ($17,500 x 110%) = $50U); (Util.: ($.25 x 64,000) – ($14,900 x 110%) = $390U); (Maint.: ($.20 x 64,000) – ($12,400 x 110%) = $840U)]
[(DM: (DM/unit x Act. units) – (Aug. act. costs x Incr. %) = Unfav. diff.); (DL: (DL/unit x Act. units) – (Aug. act. costs x Incr. %) = Fav. diff.); (Ind. mat.: (Ind. mat./unit x Act. units) – (Aug. act. costs x Incr. %) = Unfav. diff.); (Ind. labor: (Ind. labor/unit) – (Aug. act. costs x Incr. %) = Unfav. diff.); (Util.: (Util./unit x Act. units) – (Aug. act. costs x Incr. %) = Unfav. diff.); (Maint.: Maint./unit x Act. units) – (Aug. act. costs x Incr. %) = Unfav. diff.)]
LO1, 2 BT: AN Difficulty: Easy TOT: 30 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

PROBLEM 10.4

(a)

CLARKE INC.
Patio Furniture Division
Responsibility Report
For the Year Ended December 31, 2022

	Budget	Actual	Difference Favorable F Unfavorable U
Sales	$2,500,000	$2,550,000	$50,000 F
Variable costs			
Cost of goods sold	1,300,000	1,259,000	41,000 F
Selling and administrative	220,000	226,000	6,000 U
Total	1,520,000	1,485,000	35,000 F
Contribution margin	980,000	1,065,000	85,000 F
Controllable fixed costs			
Cost of goods sold	200,000	203,000	3,000 U
Selling and administrative	50,000	52,000	2,000 U
Total	250,000	255,000	5,000 U
Controllable margin	$ 730,000	$ 810,000	$80,000 F

[(Sales: $2,500,000 + $50,000 = $2,550,000); (Var. CGS: $1,300,000 - $41,000 = $1,259,000); (Var. S&A: $220,000 + $6,000 = $226,000); (CM: $980,000 + $85,000 = $1,065,000); (Control. FC CGS: $200,000 + $3,000 = $203,000); (Control. FC S&A: $50,000 + $2,000 = $52,000); (Control. margin: $730,000 + $80,000 = $810,000)]
[(Sales: Bud. amt. + Fav. diff. = Act. amt.); (Var. CGS: Bud. amt. – Fav. diff. = Act. amt.); (Var. S&A: Bud. amt. + Unfav. diff. = Act. amt.); (CM: Bud. amt. + Fav. diff. = Act. amt.); (Control FC CGS: Bud. amt. + Unfav. diff. = Act. amt.); (Control FC S&A: Bud. amt. + Unfav. diff. = Act. amt.); (Control. margin: Bud. amt. + Fav. diff. = Act. amt.)]

(b) The manager effectively controlled revenues and costs. Contribution margin was $85,000 favorable and controllable margin was $80,000 favorable. Contribution margin was favorable primarily because sales were $50,000 over budget and variable cost of goods sold was $41,000 under budget. Apparently, the manager was able to control variable cost of goods sold when sales exceeded budget expectations. The manager was ineffective in controlling fixed costs. However, the unfavorable difference of $5,000 was approximately 6% of the favorable difference in controllable margin.

PROBLEM 10.4 (Continued)

(c) Two costs are excluded from the report: (1) noncontrollable fixed costs and (2) indirect fixed costs. The reason is that neither cost is controllable by the Patio Furniture Division Manager.

LO3 BT: AN Difficulty: Moderate TOT: 30 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

PROBLEM 10.5

(a)

OPTIMUS COMPANY
Home Division
Responsibility Report
For the Year Ended December 31, 2022
(in thousands of dollars)

	Budget	Actual	Difference Favorable F Unfavorable U
Sales	**$1,300**	**$1,400**	**$100 F**
Variable costs			
Cost of goods sold	**620**	**665**	**45 U**
Selling and administrative	**100**	**125**	**25 U**
Total	**720**	**790**	**70 U**
Contribution margin	**580**	**610**	**30 F**
Controllable direct fixed costs			
Cost of goods sold	**170**	**170**	**0**
Selling and administrative	**80**	**80**	**0**
Total	**250**	**250**	**0**
Controllable margin	**$ 330**	**$ 360**	**$ 30 F**
ROI	**16.5%**	**18.0%**	**1.5% F**
	(1)	**(2)**	**(3)**

(1) $\left(\frac{\$330}{\$2{,}000}\right)$ **(2)** $\left(\frac{\$360}{\$2{,}000}\right)$ **(3)** $\left(\frac{\$30}{\$2{,}000}\right)$

[(Sales: $1,400 - $100 = $1,300); (VC CGS: $665 - $45 = $620); (VC S&A: $125 - $25 = $100); (CM: $610 - $30 = $580); (Control. margin: $360 - $30 = $330); (Bud. ROI: $330 ÷ $2,000 = 16.5%); (Act. ROI: $360 ÷ $2,000 = 18.0%); (Diff.: $30 ÷ $2,000 = 1.5%)]

[(Sales: Act. amt. – Fav. diff. = Bud. amt.); (VC CGS: Act. amt. – Unfav. diff. = Bud. amt.); (VC S&A: Act. amt – Unfav. diff. = Bud. amt.); (CM: Act. amt. – Fav. diff. = Bud. amt.); (Control. margin: Act. amt. – Fav. amt. = Bud. amt.); (Bud.: Control. margin ÷ Ave. oper. assets = ROI); (Act.: Control. margin ÷ Ave. oper. assets = ROI); (Diff.: Diff. in control. margin ÷ Ave. oper. assets = ROI diff.)]

PROBLEM 10.5 (Continued)

(b) The controllable margin of the manager of the Home Division was above budget expectations for the year by 9.1% ($30,000 ÷ $330,000). However, top management would likely recognize the limitations of using a static budget to evaluate the manager's performance in controlling variable costs and therefore would adjust the budgeted amounts for variable costs based on the increased sales as follows:

Cost of goods sold: $1,400,000 x $\left(\frac{\$620}{\$1,300}\right)$ = $667,692 and

Selling and administrative $1,400,000 x ($100 ÷ $1,300) = $107,692.

When the adjusted budget amounts for the variable costs are evaluated, the cost of goods sold variance changes to a favorable variance of approximately $3,000 which is only .4% of the adjusted budget and would most likely not require further investigation. The selling and administrative variance is still unfavorable. The variance decreases to $17,308 which is 16.1% of the adjusted budget and most likely would still require further investigation to discover the cause(s) of this variance.

(c) 1. $\frac{\$360,000 + (\$125,000 \times 4\%)}{\$2,000,000} = 18.25\%.$

[($360,000 + ($125,000 x 4%)) ÷ $2,000,000 = 18.25%]
[(Act. control. margin + (Act. var. CGS x % decr.)) ÷ Ave. oper. assets = ROI]

2. $\frac{\$360,000}{\$2,000,000 - (\$2,000,000 \times 10\%)} = 20\%.$

[$360,000 ÷ ($2,000,000 – ($2,000,000 x 10%)) = 20%
[Act. control. margin ÷ (Ave. oper. assets – (Ave. oper. assets x % decr.)) = ROI]

3. $\frac{\$360,000 + \$80,000}{\$2,000,000} = 22\%.$

[($360,000 + $80,000) ÷ $2,000,000 = 22%]
[(Act. control. margin + CM incr.) ÷ Ave. oper. assets = ROI]
LO4 BT: E Difficulty: Moderate TOT: 50 min. AACSB: Reporting IMA: Performance Measurement

PROBLEM 10.6

(a) **No. 1**

To Cutting Department Manager—Seattle Division			Month: January
Controllable Costs:	**Budget**	**Actual**	**Fav/Unfav**
Indirect labor	$ 70,000	$ 73,000	$ 3,000 U
Indirect materials	46,000	47,900	1,900 U
Maintenance	18,000	20,500	2,500 U
Utilities	17,000	20,100	3,100 U
Supervision	20,000	22,000	2,000 U
Total	$171,000	$183,500	$12,500 U

(b) **No. 2**

To Division Production Manager—Seattle			Month: January
Controllable Costs:	**Budget**	**Actual**	**Fav/Unfav**
Seattle Division	$ 51,000	$ 52,500	$ 1,500 U
Departments:			
Cutting	171,000	183,500	12,500 U
Shaping	148,000	158,000	10,000 U
Finishing	205,000	210,000	5,000 U
Total	$575,000	$604,000	$29,000 U

[(Seattle div.: $51,000 - $52,500 = $1,500U); (Cut.: $171,000 - $183,500 = $12,500U); (Shape.: $148,000 - $158,000 = $10,000U); (Fin.: $205,000 - $210,000 = $5,000U)]
[(Seattle div.: (Bud. amt. – Act. amt. = Unfav. diff.); (Cut.: (Bud. amt. – Act. div. = Unfav. diff.); (Shape: Bud. amt. – Act. amt. = Unfav. diff.); (Fin.: Bud. amt. – Act. amt. = Unfav. diff.)]

(c) **No. 3**

To Vice President—Production			Month: January
Controllable Costs:	**Budget**	**Actual**	**Fav/Unfav**
V-P Production	$ 64,000	$ 65,000	$ 1,000 U
Divisions:			
Seattle	575,000	604,000	29,000 U
Denver	673,000	678,000	5,000 U
San Diego	715,000	722,000	7,000 U
Total	$2,027,000	$2,069,000	$42,000 U

PROBLEM 10.6 (Continued)

(d) **No. 4**

To President **Month: January**

Controllable Costs:	Budget	Actual	Fav/Unfav
President	$ 74,200	$ 76,400	$ 2,200 U
Vice-Presidents:			
Production	2,027,000	2,069,000	42,000 U
Marketing	130,000	133,600	3,600 U
Finance	104,000	109,000	5,000 U
Total	$2,335,200	$2,388,000	$52,800 U

LO3 BT: AN Difficulty: Moderate TOT: 50 min. AACSB: Analytic AICPA FC: Reporting IMA: Performance Measurement

*PROBLEM 10.7

(a) 1. ROI = Controllable Margin ÷ Average Operating Assets
ROI = $2,460,000 ÷ $12,300,000
ROI = 20%

($2,460,000 ÷ $12,300,000 = 20%)
(Control. margin ÷ Ave. oper. assets = ROI

2. Residual Income = Controllable Margin – (Minimum Rate of Return x Average Operating Assets)
Residual Income = $2,460,000 – (.18 x $12,300,000)
Residual Income = $2,460,000 – $2,214,000 = $246,000

[$2,460,000 – (18% x $12,300,000) = $246,000]
[Control. margin – (Min. ROR x Ave. oper. assets) = Residual inc.]

(b) The management of Jensen Division would clearly have accepted the investment opportunity it had in 2022 if residual income had been used as the performance measure because an increase in residual income results from a project whose ROI is greater than the minimum rate of return.

If management of the Jensen Division had used ROI as the performance measure, the decision would be to reject the project because the ROI of 19% is less than Jensen's ROI experience range of 20.1% to 23.5%. With bonuses based in part on ROI, the 19% project would have a negative effect on bonuses.

LO5 BT: AN Difficulty: Moderate TOT: 30 min. AACSB: Analytic AICPA FC: Measurement, Analysis and Interpretation IMA: Performance Measurement