

$$\begin{aligned}\text{Sales-volume variance} &= \left(\frac{\text{Actual sales volume} - \text{Budgeted sales volume}}{\text{Budgeted sales volume}} \right) \times \text{Budgeted sales price} \\ &= \frac{(1,600 - 1,500)}{1,500} \times \$38 \\ &= \$3,800 \text{ Favorable}\end{aligned}$$

Together, the sales-price and sales-volume variances explain the \$2,200 favorable variance between actual and budgeted sales revenue.

Sales-price variance	\$1,600 Unfavorable
Sales-volume variance	3,800 Favorable
Variance between actual and budgeted sales revenue	<u>\$2,200 Favorable</u>

We have only just introduced sales variance analysis here. This topic is covered more extensively in cost management texts.

Review Questions

- 11-1. Distinguish between static and flexible budgets.
- 11-2. Explain the advantage of using a flexible budget.
- 11-3. Why are flexible overhead budgets based on activity measures, such as hours of process time, machine time, or direct-labor hours?
- 11-4. Distinguish between a columnar and a formula flexible budget.
- 11-5. Show, using T-accounts, how production overhead is added to Work-in-Process Inventory when standard costing is used.
- 11-6. How have advances in manufacturing technology affected overhead application?
- 11-7. What is the interpretation of the variable-overhead spending variance?
- 11-8. Jeffries Company's only variable-overhead cost is electricity. Does an unfavorable variable-overhead spending variance imply that the company paid more than the anticipated rate per kilowatt-hour?
- 11-9. What is the interpretation of the variable-overhead efficiency variance?
- 11-10. Distinguish between the interpretations of the direct-labor and variable-overhead efficiency variances.
- 11-11. What is the fixed-overhead budget variance?
- 11-12. What is the correct interpretation of the fixed-overhead volume variance?
- 11-13. Describe a common but misleading interpretation of the fixed-overhead volume variance. Why is this interpretation misleading?
- 11-14. Draw a graph showing budgeted and applied fixed overhead, and show an unfavorable (or positive) volume variance on the graph.
- 11-15. What types of organizations use flexible budgets?
- 11-16. What is the conceptual problem of applying fixed production overhead as a product cost?
- 11-17. Distinguish between the control purpose and the product-costing purpose of standard costing and flexible budgeting.
- 11-18. Why are fixed-overhead costs sometimes called capacity-producing costs?
- 11-19. Draw a graph showing both budgeted and applied variable overhead. Explain why the graph appears as it does.
- 11-20. Give one example of a plausible activity base to use in flexible budgeting for each of the following organizations: an insurance company, an express delivery service, a restaurant, and a state tax-collection agency.
- 11-21. Explain how an activity-based flexible budget differs from a conventional flexible budget.

Exercises

- **Exercise 11-22**
Straightforward Computation of Overhead Variances
(LO 11-5)

Crystal Glassware Company has the following standards and flexible-budget data.

Standard variable-overhead rate	\$6.00 per direct-labor hour
Standard quantity of direct labor	2 hours per unit of output
Budgeted fixed overhead	\$100,000
Budgeted output	25,000 units

All applicable Exercises are available in Connect.



Actual results for April are as follows:

Actual output	20,000 units
Actual variable overhead	\$320,000
Actual fixed overhead	\$97,000
Actual direct labor	50,000 hours

Required: Use the variance formulas to compute the following variances. Indicate whether each variance is favorable or unfavorable, where appropriate.

1. Variable-overhead spending variance.
2. Variable-overhead efficiency variance.
3. Fixed-overhead budget variance.
4. Fixed-overhead volume variance.

Refer to the data in the preceding exercise. Use diagrams similar to those in Exhibits 11-6 and 11-8 to compute the variable-overhead spending and efficiency variances, and the fixed-overhead budget and volume variances.

Refer to the data in the Exercise 11-22 for Crystal Glassware Company. Draw graphs similar to those in Exhibit 11-7 (variable overhead) and Exhibit 11-9 (fixed overhead) to depict the overhead variances.

Choose a city or state in the United States (or a Canadian city or province), and use the Internet to explore the annual budget for the governmental unit you selected. For example, you could check out the annual budget for **Houston, Texas** at www.houstontx.gov/budget.

Required:

1. Select three items in the budget and explain how these items would be treated if the budget were converted to an activity-based flexible budget.
2. What would be appropriate cost drivers for the budgetary items you selected?

The following data are the actual results for Marvelous Marshmallow Company for October.

Actual output	9,000 cases
Actual variable overhead	\$405,000
Actual fixed overhead	\$122,000
Actual machine time	40,500 machine hours

Standard cost and budget information for Marvelous Marshmallow Company follows:

Standard variable-overhead rate	\$9.00 per machine hour
Standard quantity of machine hours	4 hours per case of marshmallows
Budgeted fixed overhead	\$120,000 per month
Budgeted output	10,000 cases per month

Required:

1. Use any of the methods explained in the chapter to compute the following variances. Indicate whether each variance is favorable or unfavorable, where appropriate.
 - a. Variable-overhead spending variance.
 - b. Variable-overhead efficiency variance.
 - c. Fixed-overhead budget variance.
 - d. Fixed-overhead volume variance.
2. **Build a spreadsheet:** Construct an Excel spreadsheet to solve the preceding requirement. Show how the solution will change if the following information changes: actual output was 9,100 cases, and actual variable overhead was \$395,000.

■ **Exercise 11-23**
Diagram of Overhead Variances
(LO 11-5)

■ **Exercise 11-24**
Graphing Overhead Variances
(LO 11-5)

■ **Exercise 11-25**
City or State Budget; Activity-Based Flexible Budget; Cost Drivers; Use of Internet
(LO 11-4, 11-7)



■ **Exercise 11-26**
Straightforward Computation of Overhead Variances
(LO 11-5)

Exercise 11-27

Standard Hours Allowed;
Flexible Budgeting; Multiple
Products
(LO 11-1, 11-2)

Evening Star, Inc. produces binoculars of two quality levels: field and professional. The field model requires three direct-labor hours, while the professional binoculars require five hours. The firm uses direct-labor hours for flexible budgeting.

Required:

- How many standard hours are allowed in May, when 200 field models and 300 professional binoculars are manufactured?
- Suppose the company based its flexible overhead budget for May on the number of binoculars manufactured, which is 500. What difficulties would this approach cause?

Exercise 11-28

Construct a Flexible Over-
head Budget; Hospital
(LO 11-1, 11-2)



The controller for Rainbow Children's Hospital, located in Munich, Germany, estimates that the hospital uses 30 kilowatt-hours of electricity per patient-day, and that the electric rate will be .10 euro per kilowatt-hour. The hospital also pays a fixed monthly charge of 1,000 euros to the electric utility to rent emergency backup electric generators.

Required: Construct a flexible budget for the hospital's electricity costs using each of the following techniques.

- Formula flexible budget.
- Columnar flexible budget for 30,000, 40,000 and 50,000 patient-days of activity. List variable and fixed electricity costs separately.

Exercise 11-29

Interpretation of Variable-
Overhead Efficiency Variance
(LO 11-5)



You recently received the following note from the production supervisor of the company where you serve as controller. "I don't understand these crazy variable-overhead efficiency variances. My employees are very careful in their use of electricity and production supplies, and we use very little indirect labor. What are we supposed to do?" Write a brief memo responding to the production supervisor's concern.

Exercise 11-30

Reconstruct Missing Informa-
tion from Partial Data
(LO 11-2, 11-5)

You brought your work home one evening, and your nephew spilled his chocolate milk shake on the variance report you were preparing. Fortunately, knowing that overhead was applied based on machine hours, you were able to reconstruct the obliterated information from the remaining data. Fill in the missing numbers below. (*Hint:* It is helpful to solve for the unknowns in the order indicated by the letters in the following table.)

Standard machine hours per unit of output	4 hours
Standard variable-overhead rate per machine hour	\$8.00
Actual variable-overhead rate per machine hour	b
Actual machine hours per unit of output	d
Budgeted fixed overhead	\$50,000
Actual fixed overhead	a
Budgeted production in units	25,000
Actual production in units	c
Variable-overhead spending variance	\$ 72,000 U
Variable-overhead efficiency variance	\$192,000 F
Fixed-overhead budget variance	\$ 15,000 U
Fixed-overhead volume variance	g
Total actual overhead	\$713,000
Total budgeted overhead (flexible budget)	e
Total budgeted overhead (static budget)	f
Total applied overhead	\$816,000

Refer to DCdesserts.com's activity-based flexible budget in Exhibit 11-11. Suppose that the company's activity in June is described as follows:

Process hours	7,500
Production runs	16
New products tested	30
Direct material handled (pounds)	40,000

Required:

- Determine the flexible budgeted cost for each of the following:
 - Indirect material
 - Utilities
 - Inspection
 - Test kitchen
 - Material handling
 - Total overhead cost
- Compute the variance for setup cost during the month, assuming that the actual setup cost was \$3,000:
 - Using the activity-based flexible budget.
 - Using DCdesserts.com's conventional flexible budget (Exhibit 11-3).

Montoursville Control Company, which manufactures electrical switches, uses a standard-costing system. The standard production overhead costs per switch are based on direct-labor hours and are as follows:

Variable overhead (5 direct-labor hours @ \$8.00 per hour)	\$ 40
Fixed overhead (5 direct-labor hours @ \$12.00 per hour)	60
Total overhead	<u>\$100</u>

*Based on capacity of 300,000 direct-labor hours per month.

The following information is available for the month of October.

- Variable-overhead costs were \$2,340,000.
- Fixed-overhead costs were \$3,750,000.
- 56,000 switches were produced, although 60,000 switches were scheduled to be produced.
- 275,000 direct-labor hours were worked at a total cost of \$2,550,000.

Required: Compute the variable-overhead spending and efficiency variances and the fixed-overhead budget and volume variances for October. Indicate whether a variance is favorable or unfavorable where appropriate.

(CMA, adapted)

Refer to the data in Exercise 11-22 for Crystal Glassware Company. Prepare journal entries to

- Record the incurrence of actual variable overhead and actual fixed overhead.
- Add variable and fixed overhead to Work-in-Process Inventory.
- Close underapplied or overapplied overhead into Cost of Goods Sold.

The following data pertain to Aurora Electronics for the month of February.

	Static Budget	Actual
Units sold	10,000	9,000
Sales revenue	\$120,000	\$103,500
Variable manufacturing cost	40,000	36,000
Fixed manufacturing cost	20,000	20,000
Variable selling and administrative cost	10,000	9,000
Fixed selling and administrative cost	10,000	10,000

Required: Compute the sales-price and sales-volume variances for February.

Exercise 11-31
Activity-Based Flexible
Budget
(LO 11-2, 11-7)

Exercise 11-32
Overhead Variances
(LO 11-5)

Exercise 11-33
Journal Entries for Overhead
(Appendix A)
(LO 11-8)

Exercise 11-34
Sales Variances (Appendix B)
(LO 11-9)

Problems

Problem 11-35

Straightforward Overhead
Variances

(LO 11-5)

Actual variable-overhead rate:

\$3.10 per direct-labor hour

All applicable Problems are available in Connect. 

Calgary Paper Company produces paper for photocopiers. The company has developed standard overhead rates based on a monthly capacity of 180,000 direct-labor hours as follows:

Standard costs per unit (one box of paper):

Variable overhead (2 direct-labor hours @ \$3 per hour)	\$ 6
Fixed overhead (2 direct-labor hours @ \$5 per hour)	10
Total	<u>\$16</u>

During April, 90,000 units were scheduled for production; however, only 80,000 units were actually produced. The following data relate to April.

- Actual direct-labor cost incurred was \$1,567,500 for 165,000 actual hours of work.
- Actual overhead incurred totaled \$1,371,500, of which \$511,500 was variable and \$860,000 was fixed.

Required: Prepare two exhibits similar to Exhibits 11-6 and 11-8 in the chapter, which show the following variances. State whether each variance is favorable or unfavorable, where appropriate.

- Variable-overhead spending variance.
- Variable-overhead efficiency variance.
- Fixed-overhead budget variance.
- Fixed-overhead volume variance.

(CMA, adapted)

Problem 11-36

Standard Hours Allowed;
Flexible Budget; Multiple
Products; Insurance
Company

(LO 11-1, 11-2, 11-4)

4. Budgeted overhead cost
for July: \$11,800

Gibraltar Insurance Company uses a flexible overhead budget for its application-processing department. The firm offers five types of policies, with the following standard hours allowed for clerical processing.

Automobile	1 hour
Renter's	1 hour
Homeowner's	2 hours
Health	2 hours
Life	5 hours

The following numbers of insurance applications were processed during July.

Automobile	250
Renter's	200
Homeowner's	100
Health	400
Life	200

The controller estimates that the variable-overhead rate in the application-processing department is \$4.00 per clerical hour, and that fixed-overhead costs will amount to \$2,000 per month.

Required:

- How many standard clerical hours are allowed in July, given actual application activity?
- Why would it not be sensible to base the company's flexible budget on the number of applications processed instead of the number of clerical hours allowed?
- Construct a formula flexible overhead budget for the company.
- What is the flexible budget for total overhead cost in July?

Countrytime Studios is a recording studio in Nashville. The studio budgets and applies overhead costs on the basis of production time. Countrytime's controller anticipates 10,000 hours of production time to be available during the year. The following overhead amounts have been budgeted for the year.

Variable overhead	\$40,000
Fixed overhead	90,000

Required:

- Draw two graphs, one for variable overhead and one for fixed overhead. The variable on the horizontal axis of each graph should be production time, in hours, ranging from 5,000 to 15,000 hours. The variable on the vertical axis of each graph should be overhead cost (variable or fixed). Each graph should include two lines, one for the flexible-budget amount of overhead and one for applied overhead.
- Write a brief memo to Countrytime Studio's general manager, explaining the graph so that she will understand the concepts of budgeted and applied overhead.

Newark Plastics Corporation developed its overhead application rate from the annual budget. The budget is based on an expected total output of 720,000 units requiring 3,600,000 machine hours. The company is able to schedule production uniformly throughout the year. Machine hours is the cost driver for overhead costs.

A total of 66,000 units requiring 315,000 machine hours were produced during May. Actual overhead costs for May amounted to \$375,000. The actual costs, as compared to the annual budget and to one-twelfth of the annual budget, are as follows:

	NEWARK PLASTICS CORPORATION				
	Annual Budget				
	Total Amount	Per Unit	Per Machine Hour	Monthly Budget	Actual Costs for May
Variable overhead:					
Indirect material	\$1,224,000	\$1.70	\$.34	\$102,000	\$111,000
Indirect labor	900,000	1.25	.25	75,000	75,000
Fixed overhead:					
Supervision	648,000	.90	.18	54,000	51,000
Utilities	540,000	.75	.15	45,000	54,000
Depreciation	1,008,000	1.40	.28	84,000	84,000
Total	<u>\$4,320,000</u>	<u>\$6.00</u>	<u>\$1.20</u>	<u>\$360,000</u>	<u>\$375,000</u>

Required:

- Prepare a schedule showing the following amounts for Newark Plastics for May.
 - Applied overhead costs.
 - Variable-overhead spending variance.
 - Fixed-overhead budget variance.
 - Variable-overhead efficiency variance.
 - Fixed-overhead volume variance.
 Where appropriate, be sure to indicate whether each variance is favorable or unfavorable.
- Draw a graph similar to Exhibit 11-7 to depict the variable-overhead variances.
- Why does your graph differ from Exhibit 11-7, other than the fact that the numbers differ?

(CMA, adapted)

Problem 11-37

Graphing Budgeted and
Applied Overhead; Recording
Studio

(LO 11-1, 11-2, 11-3)



Problem 11-38

Overhead Variances
(LO 11-5)

1(d). Variable-overhead efficiency variance: \$8,850 F

- 12-8. Define and give examples of the following terms: *cost pool*, *cost object*, and *cost allocation* (or *distribution*).
- 12-9. Give an example of a common resource in an organization. List some of the opportunity costs associated with using the resource. Why might allocation of the cost of the common resource to its users be useful?
- 12-10. Explain how and why cost allocation might be used to assign the costs of a mainframe computer system used for research purposes in a university.
- 12-11. Define the term *cost allocation base*. What would be a sensible allocation base for assigning advertising costs to the various components of a large theme park?
- 12-12. Referring to Exhibit 12-5, why are marketing costs distributed to the Waikiki Sands Hotel's departments on the basis of *budgeted* sales dollars?
- 12-13. Explain what is meant by a *segmented income statement*.
- 12-14. Why do some managers and accountants choose not to allocate common costs in segmented reports?
- 12-15. Why is it important in responsibility accounting to distinguish between segments and segment managers?
- 12-16. List and explain three key features of the segmented income statement shown in Exhibit 12-7.
- 12-17. Can a common cost for one segment be a traceable cost for another segment? Explain your answer.
- 12-18. What is meant by *customer profitability analysis*? Give an example of an activity that might be performed more commonly for one customer than for another.
- 12-19. List seven areas in which nonfinancial, operational performance measures are receiving increased emphasis in today's manufacturing environment.
- 12-20. Define the term *manufacturing cycle efficiency*.
- 12-21. List four examples of customer acceptance measures.
- 12-22. What is meant by *aggregate productivity*, and what are its limitations?
- 12-23. Give an example of a gain sharing plan that could be implemented by an airline.
- 12-24. Using the Internet, identify the organizational strategy for a company of your choosing and suggest two performance measures in each of the four balanced scorecard categories.
- 12-25. Using the measures selected in question 12-24, explain the difference between lead and lag measures.
- 12-26. Explain how an improvement in employee retention (a Learning and Growth measure) could flow through each of the balanced scorecard perspectives to result in improved financial performance.

Exercises

Exercise 12-27

Designating Responsibility Centers
(LO 12-2)

For each of the following organizational subunits, indicate the type of responsibility center that is most appropriate.

1. A movie theater in a company that operates a chain of theaters.
2. A radio station owned by a large broadcasting network.
3. The claims department in an insurance company.
4. The ticket sales division of a major airline.
5. A bottling plant of a soft drink company.
6. An orange juice factory operated by a large orange grower.
7. The College of Engineering at a large state university.
8. The European Division of a multinational manufacturing company.
9. The outpatient clinic in a for-profit hospital.
10. The Mayor's Office in a large city.

Exercise 12-28

Responsibility Accounting; Equipment Breakdown
(LO 12-1, 12-2)



How should a responsibility-accounting system handle each of the following scenarios?

1. Department A manufactures a component, which is then used by Department B. Department A recently experienced a machine breakdown that held up production of the component. As a result, Department B was forced to curtail its own production, thereby incurring large costs of idle time. An investigation revealed that Department A's machinery had not been properly maintained.
2. Refer to the scenario above, but suppose the investigation revealed the machinery in Department A had been properly maintained.

Exercise 12-29

Assigning Responsibility for Skilled Employees' Wages
(LO 12-1)

Saddle River Electronics Company manufactures complex circuit boards for the aerospace industry. Demand for the company's products has fallen in recent months, and the firm has cut its production significantly. Many unskilled workers have been temporarily laid off. Top management has made a decision, however, not to lay off any highly skilled employees, such as inspectors and machinery operators. Management was concerned that these highly skilled employees would easily find new jobs elsewhere and not return when production returned to normal levels.

To occupy the skilled employees during the production cutback, they have been reassigned temporarily to the Maintenance Department. Here they are performing general maintenance tasks, such as repainting the interior of the factory, repairing the loading dock, and building wooden storage racks for the warehouse. The skilled employees continued to receive their normal wages, which average \$22 per hour. However, the normal wages for Maintenance Department employees average \$12 per hour.

The supervisor of the Maintenance Department recently received the March performance report, which indicated that his department's labor cost exceeded the budget by \$19,360. The department's actual labor cost was approximately 90 percent over the budget. The department supervisor complained to the controller.

Required: As the controller, how would you respond? Would you make any modification in Saddle River's responsibility-accounting system? If so, list the changes you would make. Explain your reasoning.

Xerox Corporation has been an innovator in its responsibility-accounting system. In one initiative, management changed the responsibility-center orientation of its Logistics and Distribution Department from a cost center to a profit center. The department manages the inventories and provides other logistical services to the company's Business Systems Group. Formerly, the manager of the Logistics and Distribution Department was held accountable for adherence to an operating expense budget. Now the department "sells" its services to the company's other segments, and the department's manager is evaluated partially on the basis of the department's profit. Xerox Corporation's management feels that the change has been beneficial. The change has resulted in more innovative thinking in the department and has moved decision making down to lower levels in the company.

Required: Comment on the new responsibility-center designation for the Logistics and Distribution Department.

The following data pertain to the Waikiki Sands Hotel for the month of March.

	Flexible Budget March (in thousands)*	Actual Results March (in thousands)*
Banquets and Catering	\$ 650	\$ 658
Restaurants	1,800	1,794
Kitchen staff wages	(85)	(86)
Food	(690)	(690)
Paper products	(125)	(122)
Variable overhead	(75)	(78)
Fixed overhead	(90)	(93)

*Numbers without parentheses denote profit; numbers with parentheses denote expenses.

Required: Prepare a March performance report similar to the lower portion of Exhibit 12-4. The report should have six numerical columns with headings analogous to those in Exhibit 12-4. Your performance report should cover only the Food and Beverage Department and the Kitchen. Draw arrows to show the relationships between the numbers in the report. Refer to Exhibit 12-4 for guidance. For the year-to-date columns in your report, use the data given in Exhibit 12-4. You will need to update those figures using the March data given above.

Lackawanna Community College has three divisions: Liberal Arts, Sciences, and Business Administration. The college's comptroller is trying to decide how to allocate the costs of the Admissions Department, the Registrar's Department, and the Computer Services Department. The comptroller has compiled the following data for the year just ended.

Department	Annual Cost		
Admissions	\$ 90,000		
Registrar	150,000		
Computer Services	320,000		

Division	Budgeted Enrollment	Budgeted Credit Hours	Planned Courses Requiring Computer Work
Liberal Arts	1,000	30,000	12
Sciences	800	28,000	24
Business Administration	700	22,000	24

Exercise 12-30

Responsibility-Accounting Centers; Xerox Corporation
(LO 12-1, 12-2)



Exercise 12-31

Performance Report; Hotel
(LO 12-3)

Exercise 12-32

Cost Allocation in a College
(LO 12-4)

Problem 12-51

Balanced scorecard; Banking; Use of Internet
(LO 12-7)



Visit the website of a major bank, e.g., Citibank at www.citibank.com. Explore the website to learn about the bank's services and operations.

Required:

1. What do you think the bank's overall, long-term goals are?
2. Develop a balanced scorecard for the bank. Include two to five measures in each of the scorecard's perspectives.
3. How would the balanced scorecard affect the way managers develop the bank's strategy?
4. Explain the concept of lead and lag measures in the context of the scorecard you have developed.

Cases

Case 12-52

Segmented Income Statement; Responsibility Accounting; Bonuses; Motivation; Ethics
(LO 12-1, 12-2, 12-5)

1. Operating income, Boston store: \$91,275
2. Portland store's operating income for May: \$12,375



Cathy's Classic Clothes is a retailer that sells to professional women in the northeast. The firm leases space for stores in upscale shopping centers, and the organizational structure consists of regions, districts, and stores. Each region consists of two or more districts; each district consists of three or more stores. Each store, district, and region has been established as a profit center. At all levels, the company uses a responsibility-accounting system focusing on information and knowledge rather than blame and control. Each year, managers, in consultation with their supervisors, establish financial and nonfinancial goals, and these goals are integrated into the budget. Actual performance is measured each month.

The New England Region consists of the Coastal District and the Inland District. The Coastal District includes the New Haven, Boston, and Portland stores. The Coastal District's performance has not been up to expectations in the past. For the month of May, the district manager has set performance goals with the managers of the New Haven and Boston stores, who will receive bonuses if certain performance measures are exceeded. The manager in Portland decided not to participate in the bonus scheme. Since the district manager is unsure what type of bonus will encourage better performance, the New Haven manager will receive a bonus based on sales in excess of budgeted sales of \$570,000, while the Boston manager will receive a bonus based on operating income in excess of budget. The company's operating income goal for each store is 12 percent of sales. The budgeted sales revenue for the Boston store is \$530,000.

Other pertinent data for May are as follows:

- Coastal District sales revenue was \$1,500,000, and its cost of goods sold amounted to \$633,750.
- The Coastal District spent \$75,000 on advertising.
- General and administrative expenses for the Coastal District amounted to \$180,000.
- At the New Haven store, sales were 40 percent of Coastal District sales, while sales at the Boston store were 35 percent of district sales. The cost of goods sold in both New Haven and Boston was 42 percent of sales.
- Variable selling expenses (sales commissions) were 6 percent of sales for all stores, districts, and regions.
- Variable administrative expenses were 2.5 percent of sales for all stores, districts, and regions.
- Maintenance cost includes janitorial and repair services and is a direct cost for each store. The store manager has complete control over this outlay. Maintenance costs were incurred as follows: New Haven, \$7,500; Boston, \$600; and Portland, \$4,500.
- Advertising is considered a direct cost for each store and is completely under the control of the store manager. The New Haven store spent two-thirds of the Coastal District total outlay for advertising, which was 10 times the amount spent in Boston on advertising.
- Coastal District rental expense amounted to \$150,000.
- The rental expenses at the New Haven store were 40 percent of the Coastal District's total, while the Boston store incurred 30 percent of the district total.
- District expenses were allocated to the stores based on sales.
- New England Region general and administrative expenses of \$165,000 were allocated to the Coastal District. These expenses were, in turn, allocated equally to the district's three stores.

Required:

1. Prepare the May segmented income statement for the Coastal District and for the New Haven and Boston stores.
2. Compute the Portland store's operating income for May.
3. Discuss the impact of the responsibility-accounting system and bonus structure on the managers' behavior and the effect of their behavior on the financial results for the New Haven store and the Boston store.
4. The assistant controller for the New England Region, Jack Isner, has been a close friend of the New Haven store manager for over 20 years. When Isner saw the segmented income statement [as prepared in requirement (1)], he realized that the New Haven store manager had really gone overboard on advertising expenditures. To make his friend look better to the regional management, he reclassified \$25,000 of the advertising expenditures as miscellaneous expenses, and buried them in rent and other costs. Comment on the ethical issues in the assistant controller's actions. (Refer to specific ethical standards that were given in Chapter 1.)

(CMA, adapted)

Pacific Rim Industries is a diversified company whose products are marketed both domestically and internationally. The company's major product lines are furniture, sports equipment, and household appliances. At a recent meeting of Pacific Rim's board of directors, there was a lengthy discussion on ways to improve overall corporate profitability. The members of the board decided that they required additional financial information about individual corporate operations in order to target areas for improvement.

Danielle Murphy, the controller, has been asked to provide additional data that would assist the board in its investigation. Murphy believes that income statements, prepared along both product lines and geographic areas, would provide the directors with the required insight into corporate operations. Murphy had several discussions with the division managers for each product line and compiled the following information from these meetings.

	Product Lines			
	Furniture	Sports	Appliances	Total
Production and sales in units	160,000	180,000	160,000	500,000
Average selling price per unit	\$8.00	\$20.00	\$15.00	
Average variable manufacturing cost per unit	4.00	9.50	8.25	
Average variable selling expense per unit	2.00	2.50	2.25	
Fixed manufacturing overhead, excluding depreciation				\$ 500,000
Depreciation of plant and equipment				400,000
Administrative and selling expense				1,160,000

1. The division managers concluded that Murphy should allocate fixed manufacturing overhead to both product lines and geographic areas on the basis of the ratio of the variable costs expended to total variable costs.
2. Each of the division managers agreed that a reasonable basis for the allocation of depreciation on plant and equipment would be the ratio of units produced per product line (or per geographical area) to the total number of units produced.
3. There was little agreement on the allocation of administrative and selling expenses, so Murphy decided to allocate only those expenses that were traceable directly to a segment. For example, manufacturing staff salaries would be allocated to product lines, and sales staff salaries would be allocated to geographic areas. Murphy used the following data for this allocation.

Manufacturing Staff		Sales Staff	
Furniture	\$120,000	United States	\$60,000
Sports	140,000	Canada	100,000
Appliances	80,000	Asia	250,000

Case 12-53

Segmented Income Statement; International Operations
(LO 12-1, 12-5)

1. Operating income (loss), Canada: \$421,000

