

E1-1, E1-2, P1-4

E2-1; E2-2; E2-3; E2-5 P2-24,

E3-1; E3-11, P3-22; P3-27,

E4-7; E4-11, P4-14,

E5-4, P5-12; P5-16,

E6-4; E6-5, P6-19; P6-20

Cases: C2-26

Case: C3-34 Case: 6-32 (In Excel spreadsheet or Word document, as is deemed appropriate).

EXERCISE 1-1 The Roles of Managers and Management Accountants [LO1]

Six terms that relate to organizations, the work of management, and the role of managerial accounting are listed below:

Decentralization	Controller
Line	Organization chart
Staff	Chief Financial Officer

Choose the term above that most appropriately completes the following statements:

1. A position that is directly related to achieving the basic objectives of an organization is called a _____ position.
2. A diagram that shows how responsibility is divided among managers and shows the formal lines of reporting and communication is called an _____.
3. A _____ position provides service or assistance to other parts of the organization and does not directly achieve the basic objectives of the organization.
4. The delegation of decision-making authority throughout an organization by allowing managers at various operating levels to make key decisions relating to their area of responsibility is called _____.
5. The manager in charge of the accounting department is generally known as the _____.
6. The _____ is the member of the top management team who is responsible for providing timely and relevant data to support planning and control activities and for preparing financial statements for external users.

EXERCISE 1-2 The Business Environment [LO2]

A number of terms are listed below:

Six Sigma	value chain	enterprise risk management
customer value proposition	stakeholders	The Sarbanes-Oxley Act of 2002
lean thinking model	pulls	nonconstraint
supply chain management	business process	constraint
Theory of Constraints	corporate governance	corporate social responsibility
non-value-added activity	strategy	manufacturing cell

Required:

Choose the term or terms from the above list that most appropriately completes each of the following statements:

1. A(n) _____ is a game plan that enables a company to attract customers by distinguishing itself from competitors.
2. _____ is a method that relies on customer feedback and objective data gathering and analysis techniques to drive process improvement.
3. A(n) _____ is a series of steps that are followed to carry out some task in a business.
4. The system by which a company is directed and controlled is called _____.
5. The process used by a company to help identify the risks that it faces and to develop responses to those risks so that the company is reasonably assured of meeting its goals is known as _____.
6. A _____ is a work space that takes employees and equipment from departments that were previously separated from one another and places them side-by-side.
7. The various groups of people, such as employees, customers, and suppliers, whose interests are tied to a company's performance are called _____.
8. A(n) _____ is anything that prevents an organization or individual from getting more of what it wants.
9. Increasing the rate of output of a(n) _____ as the result of an improvement effort is unlikely to have much effect on profits.
10. A(n) _____ consists of business functions that add value to a company's products and services such as research and development, product design, manufacturing, marketing, distribution, and customer service.
11. _____ is a concept whereby organizations consider the needs of all stakeholders when making decisions.
12. A management approach that coordinates business processes across companies to better serve end consumers is known as _____.
13. The _____ is a five-step management approach that organizes resources around the flow of business processes and that _____ units through those processes in response to customer orders.
14. A company can only succeed if it creates a reason for customers to choose it over a competitor; in short, a _____.
15. _____ was enacted to protect the interests of those who invest in publicly traded companies.
16. A(n) _____ consumes resources but does not add value for which customers are willing to pay.
17. The management approach that emphasizes the importance of managing constraints is known as the _____.

PROBLEM 1-4 Ethics and the Manager [LO3]

Richmond, Inc., operates a chain of 44 department stores. Two years ago, the board of directors of Richmond approved a large-scale remodeling of its stores to attract a more upscale clientele.

Before finalizing these plans, two stores were remodeled as a test. Linda Perlman, assistant controller, was asked to oversee the financial reporting for these test stores, and she and other management personnel were offered bonuses based on the sales growth and profitability of these stores. While completing the financial reports, Perlman discovered a sizable inventory of outdated goods that should have been discounted for sale or returned to the manufacturer. She discussed the situation with her management colleagues; the consensus was to ignore reporting this inventory as obsolete because reporting it would diminish the financial results and their bonuses.

Required:

1. According to the IMA's Statement of Ethical Professional Practice, would it be ethical for Perlman *not* to report the inventory as obsolete?
2. Would it be easy for Perlman to take the ethical action in this situation?

EXERCISE 2-1 The Work of Management and Managerial and Financial Accounting [LO1]

A number of terms that relate to organizations, the work of management, and the role of managerial accounting are listed below:

Budgets	Controller
Directing and motivating	Feedback
Financial accounting	Managerial accounting
Performance report	Planning
Precision	Timeliness

Required:

Choose the term or terms above that most appropriately complete the following statements. A term may be used more than once or not at all.

1. When _____, managers mobilize people to carry out plans and run routine operations.
2. The plans of management are expressed formally in _____.
3. _____ consists of identifying alternatives, selecting from among the alternatives the one that is best for the organization, and specifying what actions will be taken to implement the chosen alternative.
4. Managerial accounting places less emphasis on _____ and more emphasis on _____ than financial accounting.
5. _____ is concerned with providing information for the use of those who are inside the organization, whereas _____ is concerned with providing information for the use of those who are outside the organization.
6. _____ emphasizes detailed segment reports about departments, customers, products, and customers.
7. _____ must follow GAAP, whereas _____ need not follow GAAP.
8. The accounting and other reports that help managers monitor performance and focus on problems and/or opportunities are a form of _____.
9. The manager in charge of the accounting department is usually known as the _____.
10. A detailed report to management comparing budgeted data with actual data for a specific time period is a _____.

EXERCISE 2-2 Classifying Manufacturing Costs [LO2]

The PC Works assembles custom computers from components supplied by various manufacturers. The company is very small and its assembly shop and retail sales store are housed in a single facility in a Redmond, Washington, industrial park. Listed below are some of the costs that are incurred at the company.

Required:

For each cost, indicate whether it would most likely be classified as direct labor, direct materials, manufacturing overhead, selling, or an administrative cost.

1. The cost of a hard drive installed in a computer.
2. The cost of advertising in the *Puget Sound Computer User* newspaper.
3. The wages of employees who assemble computers from components.
4. Sales commissions paid to the company's salespeople.
5. The wages of the assembly shop's supervisor.
6. The wages of the company's accountant.

EXERCISE 2-3 Classification of Costs as Period or Product Cost [LO3]

Suppose that you have been given a summer job as an intern at Issac Aircams, a company that manufactures sophisticated spy cameras for remote-controlled military reconnaissance aircraft. The company, which is privately owned, has approached a bank for a loan to help it finance its growth. The bank requires financial statements before approving such a loan. You have been asked to help prepare the financial statements and were given the following list of costs:

1. Depreciation on salespersons' cars.
2. Rent on equipment used in the factory.
3. Lubricants used for machine maintenance.
4. Salaries of personnel who work in the finished goods warehouse.
5. Soap and paper towels used by factory workers at the end of a shift.
6. Factory supervisors' salaries.
7. Heat, water, and power consumed in the factory.
8. Materials used for boxing products for shipment overseas. (Units are not normally boxed.)
9. Advertising costs.
10. Workers' compensation insurance for factory employees.
11. Depreciation on chairs and tables in the factory lunchroom.
12. The wages of the receptionist in the administrative offices.
13. Cost of leasing the corporate jet used by the company's executives.
14. The cost of renting rooms at a Florida resort for the annual sales conference.
15. The cost of packaging the company's product.

Required:

Classify the above costs as either product costs or period costs for the purpose of preparing the financial statements for the bank.

EXERCISE 2-5 Prepare a Schedule of Cost of Goods Manufactured [LO5]

Lompac Products manufactures a variety of products in its factory. Data for the most recent month's operations appear below:

Beginning raw materials inventory	\$60,000
Purchases of raw materials	\$690,000
Ending raw materials inventory	\$45,000
Direct labor	\$135,000
Manufacturing overhead	\$370,000
Beginning work in process inventory	\$120,000
Ending work in process inventory	\$130,000

Required:

Prepare a schedule of cost of goods manufactured for the company for the month.

PROBLEM 2-24 Income Statement: Schedule of Cost of Goods Manufactured [LO2, LO3, LO4, LO5]
 Visic Corporation, a manufacturing company, produces a single product. The following information has been taken from the company's production, sales, and cost records for the just completed year.

Production in units	29,000
Sales in units	?
Ending finished goods inventory in units	?
Sales in dollars	\$1,300,000
Costs:	
Direct labor	\$90,000
Raw materials purchased	\$480,000
Manufacturing overhead	\$300,000
Selling and administrative expenses	\$380,000

	Beginning of the Year	End of the Year
Inventories:		
Raw materials	\$20,000	\$30,000
Work in process	\$50,000	\$40,000
Finished goods	\$0	?

The finished goods inventory is being carried at the average unit production cost for the year. The selling price of the product is \$50 per unit.

Required:

1. Prepare a schedule of cost of goods manufactured for the year.
2. Compute the following:
 - a. The number of units in the finished goods inventory at the end of the year.
 - b. The cost of the units in the finished goods inventory at the end of the year.
3. Prepare an income statement for the year.

CASE 2-26 Inventory Computations from Incomplete Data [LO4, LO5]

Hector P. Wastrel, a careless employee, left some combustible materials near an open flame in Salter Company's plant. The resulting explosion and fire destroyed the entire plant and administrative offices. Justin Quick, the company's controller, and Constance Trueheart, the operations manager, were able to save only a few bits of information as they escaped from the roaring blaze.

"What a disaster," cried Justin. "And the worst part is that we have no records to use in filing an insurance claim."

"I know," replied Constance. "I was in the plant when the explosion occurred, and I managed to grab only this brief summary sheet that contains information on one or two of our costs. It says that our direct labor cost this year totaled \$180,000 and that we purchased \$290,000 in raw materials. But I'm afraid that doesn't help much; the rest of our records are just ashes."

"Well, not completely," said Justin. "I was working on the year-to-date income statement when the explosion knocked me out of my chair. I instinctively held onto the page I was working on, and from what I can make out, our sales to date this year totaled \$1,200,000 and our gross margin was 40% of sales. Also, I can see that our goods available for sale to customers totaled \$810,000 at cost."

"Maybe we're not so bad off after all," exclaimed Constance. "My sheet says that prime cost totaled \$410,000 so far this year and that manufacturing overhead is 70% of conversion cost. Now if we just had some information on our beginning inventories."

"Hey, look at this," cried Justin. "It's a copy of last year's annual report, and it shows what our inventories were when this year started. Let's see, raw materials was \$18,000, work in process was \$65,000, and finished goods was \$45,000.

"Super," yelled Constance. "Let's go to work."

To file an insurance claim, the company must determine the amount of cost in its inventories as of the date of the fire. You may assume that all materials used in production during the year were direct materials.

Required:

Determine the amount of cost in the Raw Materials, Work in Process, and Finished Goods inventory accounts as of the date of the fire. (Hint: One way to proceed would be to reconstruct the various schedules and statements that would have been affected by the company's inventory accounts during the period.)

EXERCISE 3-1 Process Costing and Job-Order Costing [LO1]

Which method of determining product costs, job-order costing or process costing, would be more appropriate in each of the following situations?

- a. An Elmer's glue factory.
- b. A textbook publisher such as McGraw-Hill.
- c. An Exxon oil refinery.
- d. A facility that makes Minute Maid frozen orange juice.
- e. A Scott paper mill.
- f. A custom home builder.
- g. A shop that customizes vans.
- h. A manufacturer of specialty chemicals.
- i. An auto repair shop.
- j. A Firestone tire manufacturing plant.
- k. An advertising agency.
- l. A law office.

EXERCISE 3-11 Applying Overhead; Journal Entries; Disposition of Underapplied or Overapplied Overhead [LO4, LO7, LO8]

The following information is taken from the accounts of Latta Company. The entries in the T-accounts are summaries of the transactions that affected those accounts during the year.

Manufacturing Overhead		Work in Process	
(a) 460,000	(b) 390,000	Bal. 15,000	(c) 710,000
Bal. 70,000		260,000	
		85,000	
		(b) 390,000	
		Bal. 40,000	

Finished Goods		Cost of Goods Sold	
Bal. 50,000	(d) 640,000	(d) 640,000	
(c) 710,000			
Bal. 120,000			

The overhead that had been applied to production during the year is distributed among the ending balances in the accounts as follows:

Work in Process, ending	\$ 19,500
Finished Goods, ending	58,500
Cost of Goods Sold	<u>312,000</u>
Overhead applied	<u>\$390,000</u>

For example, of the \$40,000 ending balance in Work in Process, \$19,500 was overhead that had been applied during the year.

Required:

1. Identify reasons for entries (a) through (d).
2. Assume that the company closes any balance in the Manufacturing Overhead account directly to Cost of Goods Sold. Prepare the necessary journal entry.
3. Assume instead that the company allocates any balance in the Manufacturing Overhead account to the other accounts in proportion to the overhead applied in their ending balances. Prepare the necessary journal entry, with supporting computations.

PROBLEM 3-22 Comprehensive Problem [LO3, LO4, LO5, LO7, LO8]

Gold Nest Company of Guangdong, China, is a family-owned enterprise that makes birdcages for the South China market. A popular pastime among older Chinese men is to take their pet birds on daily excursions to teahouses and public parks where they meet with other bird owners to talk and play mahjong. A great deal of attention is lavished on these birds, and the birdcages are often elaborately constructed from exotic woods and contain porcelain feeding bowls and silver roosts. Gold Nest Company makes a broad range of birdcages that it sells through an extensive network of street vendors who receive commissions on their sales. The Chinese currency is the renminbi, which is denoted by Rmb. All of the company's transactions with customers, employees, and suppliers are conducted in cash; there is no credit.

The company uses a job-order costing system in which overhead is applied to jobs on the basis of direct labor cost. At the beginning of the year, it was estimated that the total direct labor cost for the year would be Rmb200,000 and the total manufacturing overhead cost would be Rmb330,000. At the beginning of the year, the inventory balances were as follows:

Raw materials	Rmb25,000
Work in process	Rmb10,000
Finished goods	Rmb40,000

During the year, the following transactions were completed:

- Raw materials purchased for cash, Rmb275,000.
- Raw materials requisitioned for use in production, Rmb280,000 (materials costing Rmb220,000 were charged directly to jobs; the remaining materials were indirect).
- Costs for employee services were incurred as follows:

Direct labor	Rmb180,000
Indirect labor	Rmb72,000
Sales commissions	Rmb63,000
Administrative salaries	Rmb90,000

- Rent for the year was Rmb18,000 (Rmb13,000 of this amount related to factory operations, and the remainder related to selling and administrative activities).
- Utility costs incurred in the factory, Rmb57,000.
- Advertising costs incurred, Rmb140,000.
- Depreciation recorded on equipment, Rmb100,000. (Rmb88,000 of this amount was on equipment used in factory operations; the remaining Rmb12,000 was on equipment used in selling and administrative activities.)
- Manufacturing overhead cost was applied to jobs, Rmb ____?
- Goods that had cost Rmb675,000 to manufacture according to their job cost sheets were completed.
- Sales for the year totaled Rmb1,250,000. The total cost to manufacture these goods according to their job cost sheets was Rmb700,000.

Required:

- Prepare journal entries to record the transactions for the year.
- Prepare T-accounts for inventories, Manufacturing Overhead, and Cost of Goods Sold. Post relevant data from your journal entries to these T-accounts (don't forget to enter the beginning balances in your inventory accounts). Compute an ending balance in each account.

PROBLEM 3-27 Schedule of Cost of Goods Manufactured; Overhead Analysis [LO3, LO5, LO6, LO7]

Gitano Products operates a job-order costing system and applies overhead cost to jobs on the basis of direct materials *used in production* (not on the basis of raw materials purchased). All materials are classified as direct materials. In computing a predetermined overhead rate at the beginning of the year, the company's estimates were: manufacturing overhead cost, \$800,000; and direct materials to be used in production, \$500,000. The company has provided the following data in the form of an Excel worksheet:

	A	B	C
1		Beginning	Ending
2	Raw Materials	\$20,000	\$80,000
3	Work in Process	\$150,000	\$70,000
4	Finished Goods	\$260,000	\$400,000
5			
6	The following actual costs were incurred during the year:		
7	Purchase of raw materials (all direct)		\$510,000
8	Direct labor cost		\$90,000
9	Manufacturing overhead costs:		
10	Indirect labor		\$170,000
11	Property taxes		\$48,000
12	Depreciation of equipment		\$260,000
13	Maintenance		\$95,000
14	Insurance		\$7,000
15	Rent, building		\$180,000
16			

Required:

- Compute the predetermined overhead rate for the year.
 - Compute the amount of underapplied or overapplied overhead for the year.
- Prepare a schedule of cost of goods manufactured for the year.
- Compute the Cost of Goods Sold for the year. (Do not include any underapplied or overapplied overhead in your Cost of Goods Sold figure.) What options are available for disposing of underapplied or overapplied overhead?
- Job 215 was started and completed during the year. What price would have been charged to the customer if the job required \$8,500 in direct materials and \$2,700 in direct labor cost and the company priced its jobs at 25% above the job's cost according to the accounting system?
- Direct materials made up \$24,000 of the \$70,000 ending Work in Process inventory balance. Supply the information missing below:

Direct materials	\$24,000
Direct labor	?
Manufacturing overhead	?
Work in process inventory	<u>\$70,000</u>

CASE 3-34 Critical Thinking: Interpretation of Manufacturing Overhead Rates [LO3, LO5]

Kelvin Aerospace, Inc., manufactures parts such as rudder hinges for the aerospace industry. The company uses a job-order costing system with a predetermined plantwide overhead rate based on direct labor-hours. On December 16, 2008, the company's controller made a preliminary estimate of the predetermined overhead rate for the year 2009. The new rate was based on the estimated total manufacturing overhead cost of \$3,402,000 and the estimated 63,000 total direct labor-hours for 2009:

$$\begin{aligned}\text{Predetermined overhead rate} &= \frac{\$3,402,000}{63,000 \text{ hours}} \\ &= \$54 \text{ per direct labor-hour}\end{aligned}$$

This new predetermined overhead rate was communicated to top managers in a meeting on December 19. The rate did not cause any comment because it was within a few pennies of the overhead rate that had been used during 2008. One of the subjects discussed at the meeting was a proposal by the production manager to purchase an automated milling machine built by Sunghi Industries. The president of Kelvin Aerospace, Harry Arcany, agreed to meet with the sales representative from Sunghi Industries to discuss the proposal.

On the day following the meeting, Mr. Arcany met with Jasmine Chang, Sunghi Industries' sales representative. The following discussion took place:

Arcany: Wally, our production manager, asked me to meet with you because he is interested in installing an automated milling machine. Frankly, I'm skeptical. You're going to have to show me this isn't just another expensive toy for Wally's people to play with.

Chang: This is a great machine with direct bottom-line benefits. The automated milling machine has three major advantages. First, it is much faster than the manual methods you are using. It can process about twice as many parts per hour as your present milling machines. Second, it is much more flexible. There are some up-front programming costs, but once those have been incurred, almost no setup is required to run a standard operation. You just punch in the code for the standard operation, load the machine's hopper with raw material, and the machine does the rest.

Arcany: What about cost? Having twice the capacity in the milling machine area won't do us much good. That center is idle much of the time anyway.

Chang: I was getting there. The third advantage of the automated milling machine is lower cost. Wally and I looked over your present operations, and we estimated that the automated equipment would eliminate the need for about 6,000 direct labor-hours a year. What is your direct labor cost per hour?

Arcany: The wage rate in the milling area averages about \$32 per hour. Fringe benefits raise that figure to about \$41 per hour.

Chang: Don't forget your overhead.

Arcany: Next year the overhead rate will be \$54 per hour.

Chang: So including fringe benefits and overhead, the cost per direct labor-hour is about \$95.

Arcany: That's right.

Chang: Since you can save 6,000 direct labor-hours per year, the cost savings would amount to about \$570,000 a year. And our 60-month lease plan would require payments of only \$348,000 per year.

Arcany: That sounds like a no-brainer. When can you install the equipment?

Shortly after this meeting, Mr. Arcany informed the company's controller of the decision to lease the new equipment, which would be installed over the Christmas vacation period. The controller realized that this decision would require a recomputation of the predetermined overhead rate for the year 2009 because the decision would affect both the manufacturing overhead and the

direct labor-hours for the year. After talking with both the production manager and the sales representative from Sunghi Industries, the controller discovered that in addition to the annual lease cost of \$348,000, the new machine would also require a skilled technician/programmer who would have to be hired at a cost of \$50,000 per year to maintain and program the equipment. Both of these costs would be included in factory overhead. There would be no other changes in total manufacturing overhead cost, which is almost entirely fixed. The controller assumed that the new machine would result in a reduction of 6,000 direct labor-hours for the year from the levels that had initially been planned.

When the revised predetermined overhead rate for the year 2009 was circulated among the company's top managers, there was considerable dismay.

Required:

1. Recompute the predetermined rate assuming that the new machine will be installed. Explain why the new predetermined overhead rate is higher (or lower) than the rate that was originally estimated for the year 2009.
2. What effect (if any) would this new rate have on the cost of jobs that do not use the new automated milling machine?
3. Why would managers be concerned about the new overhead rate?
4. After seeing the new predetermined overhead rate, the production manager admitted that he probably wouldn't be able to eliminate all of the 6,000 direct labor-hours. He had been hoping to accomplish the reduction by not replacing workers who retire or quit, but that had not been possible. As a result, the real labor savings would be only about 2,000 hours—one worker. Given this additional information, evaluate the original decision to acquire the automated milling machine from Sunghi Industries.

Required:

Prepare journal entries showing the flow of costs through the two processing departments during April.

EXERCISE 4-7 Equivalent Units—Weighted-Average Method [LO2]

Hielta Oy, a Finnish company, processes wood pulp for various manufacturers of paper products. Data relating to tons of pulp processed during June are provided below:

	Tons of Pulp	Percent Completed	
		Materials	Labor and Overhead
Work in process, June 1	20,000	90%	80%
Work in process, June 30	30,000	60%	40%
Started into production during June	190,000		

Required:

1. Compute the number of tons of pulp completed and transferred out during June.
2. Compute the equivalent units of production for materials and for labor and overhead for June.

EXERCISE 4-11 Cost Assignment; Cost Reconciliation—Weighted-Average Method [LO2, LO4, LO5]

Superior Micro Products uses the weighted-average method in its process costing system. During January, the Delta Assembly Department completed its processing of 25,000 units and transferred them to the next department. The cost of beginning inventory and the costs added during January amounted to \$599,780 in total. The ending inventory in January consisted of 3,000 units, which were 80% complete with respect to materials and 60% complete with respect to labor and overhead. The costs per equivalent unit for the month were as follows:

	Materials	Labor	Overhead
Cost per equivalent unit	\$12.50	\$3.20	\$6.40

Required:

1. Compute the equivalent units of materials, labor, and overhead in the ending inventory for the month.
2. Compute the cost of ending inventory and of the units transferred to the next department for January.
3. Prepare a cost reconciliation for January. (Note: You will not be able to break the cost to be accounted for into the cost of beginning inventory and costs added during the month.)

PROBLEM 4-14 Comprehensive Problem—Weighted-Average Method [LO2, LO3, LO4, LO5]

Builder Products, Inc., manufactures a caulking compound that goes through three processing stages prior to completion. Information on work in the first department, Cooking, is given below for May:

Production data:

Pounds in process, May 1; materials 100% complete; conversion 80% complete	10,000
Pounds started into production during May	100,000
Pounds completed and transferred out	?
Pounds in process, May 31; materials 60% complete; conversion 20% complete	15,000

Cost data:

Work in process inventory, May 1:	
Materials cost	\$1,500
Conversion cost	\$7,200
Cost added during May:	
Materials cost	\$154,500
Conversion cost	\$90,800

The company uses the weighted-average method.

Required:

1. Compute the equivalent units of production.
2. Compute the costs per equivalent unit for the month.
3. Determine the cost of ending work in process inventory and of the units transferred out to the next department.
4. Prepare a cost reconciliation report for the month.

EXERCISE 5-4 Contribution Format Income Statement [LO4]

The Alpine House, Inc., is a large retailer of winter sports equipment. An income statement for the company's Ski Department for a recent quarter is presented below:

The Alpine House, Inc. Income Statement—Ski Department For the Quarter Ended March 31		
Sales		\$150,000
Cost of goods sold		<u>90,000</u>
Gross margin		60,000
Selling and administrative expenses:		
Selling expenses	\$30,000	
Administrative expenses	<u>10,000</u>	<u>40,000</u>
Net operating income		<u>\$ 20,000</u>

Skis sell, on the average, for \$750 per pair. Variable selling expenses are \$50 per pair of skis sold. The remaining selling expenses are fixed. The administrative expenses are 20% variable and 80% fixed. The company does not manufacture its own skis; it purchases them from a supplier for \$450 per pair.

Required:

1. Prepare a contribution format income statement for the quarter.
2. For every pair of skis sold during the quarter, what was the contribution toward covering fixed expenses and toward earning profits?

PROBLEM 5-12 Cost Behavior; High-Low Method; Contribution Format Income Statement
[LO1, LO3, LO4]

Morrisey & Brown, Ltd., of Sydney is a merchandising company that is the sole distributor of a product that is increasing in popularity among Australian consumers. The company's income statements for the three most recent months follow:

Morrisey & Brown, Ltd. Income Statements For the Three Months Ended September 30			
	July	August	September
Sales in units	4,000	4,500	5,000
Sales revenue	A\$400,000	A\$450,000	A\$500,000
Cost of goods sold	240,000	270,000	300,000
Gross margin	160,000	180,000	200,000
Selling and administrative expenses:			
Advertising expense	21,000	21,000	21,000
Shipping expense	34,000	36,000	38,000
Salaries and commissions	78,000	84,000	90,000
Insurance expense	6,000	6,000	6,000
Depreciation expense	15,000	15,000	15,000
Total selling and administrative expenses	154,000	162,000	170,000
Net operating income	A\$ 6,000	A\$ 18,000	A\$ 30,000

(Note: Morrisey & Brown, Ltd.'s Australian-formatted income statement has been recast in the format common in the United States. The Australian dollar is denoted here by A\$.)

Required:

1. Identify each of the company's expenses (including cost of goods sold) as either variable, fixed, or mixed.
2. Using the high-low method, separate each mixed expense into variable and fixed elements. State the cost formula for each mixed expense.
3. Redo the company's income statement at the 5,000-unit level of activity using the contribution format.

PROBLEM 5-16 High-Low Method; Cost of Goods Manufactured [LO1, LO3]

Amfac Company manufactures a single product. The company keeps careful records of manufacturing activities from which the following information has been extracted:

	Level of Activity	
	March-Low	June-High
Number of units produced	6,000	9,000
Cost of goods manufactured	\$168,000	\$257,000
Work in process inventory, beginning	\$9,000	\$32,000
Work in process inventory, ending	\$15,000	\$21,000
Direct materials cost per unit	\$6	\$6
Direct labor cost per unit	\$10	\$10
Manufacturing overhead cost, total	?	?

The company's manufacturing overhead cost consists of both variable and fixed cost elements. To have data available for planning, management wants to determine how much of the overhead cost is variable with units produced and how much of it is fixed per month.

Required:

- For both March and June, estimate the amount of manufacturing overhead cost added to production. The company had no underapplied or overapplied overhead in either month. (Hint: A useful way to proceed might be to construct a schedule of cost of goods manufactured.)
- Using the high-low method, estimate a cost formula for manufacturing overhead. Express the variable portion of the formula in terms of a variable rate per unit of product.
- If 7,000 units are produced during a month, what would be the cost of goods manufactured? (Assume that work in process inventories do not change and that there is no underapplied or overapplied overhead cost for the month.)

EXERCISE 6-4 Computing and Using the CM Ratio [LO3]

Last month when Holiday Creations, Inc., sold 50,000 units, total sales were \$200,000, total variable expenses were \$120,000, and fixed expenses were \$65,000.

Required:

- What is the company's contribution margin (CM) ratio?
- Estimate the change in the company's net operating income if it were to increase its total sales by \$1,000.

EXERCISE 6-5 Changes in Variable Costs, Fixed Costs, Selling Price, and Volume [LO4]

Data for Hermann Corporation are shown below:

	Per Unit	Percent of Sales
Selling price	\$90	100%
Variable expenses	63	70
Contribution margin	<u>\$27</u>	<u>30%</u>

Fixed expenses are \$30,000 per month and the company is selling 2,000 units per month.

Required:

- The marketing manager argues that a \$5,000 increase in the monthly advertising budget would increase monthly sales by \$9,000. Should the advertising budget be increased?
- Refer to the original data. Management is considering using higher-quality components that would increase the variable cost by \$2 per unit. The marketing manager believes the higher-quality product would increase sales by 10% per month. Should the higher-quality components be used?

PROBLEM 6-19 Basics of CVP Analysis [LO1, LO3, LO4, LO6, LO8]

Feather Friends, Inc., distributes a high-quality wooden birdhouse that sells for \$20 per unit. Variable costs are \$8 per unit, and fixed costs total \$180,000 per year.

Required:

Answer the following independent questions:

1. What is the product's CM ratio?
2. Use the CM ratio to determine the break-even point in sales dollars.
3. Due to an increase in demand, the company estimates that sales will increase by \$75,000 during the next year. By how much should net operating income increase (or net loss decrease) assuming that fixed costs do not change?
4. Assume that the operating results for last year were:

Sales	\$400,000
Variable expenses	<u>160,000</u>
Contribution margin	240,000
Fixed expenses	<u>180,000</u>
Net operating income	<u><u>\$ 60,000</u></u>

- a. Compute the degree of operating leverage at the current level of sales.
 - b. The president expects sales to increase by 20% next year. By what percentage should net operating income increase?
5. Refer to the original data. Assume that the company sold 18,000 units last year. The sales manager is convinced that a 10% reduction in the selling price, combined with a \$30,000 increase in advertising, would cause annual sales in units to increase by one-third. Prepare two contribution format income statements, one showing the results of last year's operations and one showing the results of operations if these changes are made. Would you recommend that the company do as the sales manager suggests?
 6. Refer to the original data. Assume again that the company sold 18,000 units last year. The president does not want to change the selling price. Instead, he wants to increase the sales commission by \$1 per unit. He thinks that this move, combined with some increase in advertising, would increase annual sales by 25%. By how much could advertising be increased with profits remaining unchanged? Do not prepare an income statement; use the incremental analysis approach.



PROBLEM 6-20 Sales Mix; Multiproduct Break-Even Analysis [LO9]

Gold Star Rice, Ltd., of Thailand exports Thai rice throughout Asia. The company grows three varieties of rice—Fragrant, White, and Loonzain. (The currency in Thailand is the baht, which is denoted by B.) Budgeted sales by product and in total for the coming month are shown below:

	Product						
	White		Fragrant		Loonzain		Total
Percentage of total sales	20%		52%		28%		100%
Sales	B150,000	100%	B390,000	100%	B210,000	100%	B750,000
Variable expenses	108,000	72%	78,000	20%	84,000	40%	270,000
Contribution margin	<u>B 42,000</u>	<u>28%</u>	<u>B312,000</u>	<u>80%</u>	<u>B126,000</u>	<u>60%</u>	<u>480,000</u>
Fixed expenses							449,280
Net operating income							<u>B30,720</u>

$$\text{Dollar sales to break even} = \frac{\text{Fixed expenses}}{\text{CM ratio}} = \frac{B449,280}{0.64} = B702,000$$

As shown by these data, net operating income is budgeted at B30,720 for the month and break-even sales at B702,000.

Assume that actual sales for the month total B750,000 as planned. Actual sales by product are: White, B300,000; Fragrant, B180,000; and Loonzain, B270,000.

Required:

1. Prepare a contribution format income statement for the month based on actual sales data. Present the income statement in the format shown on the prior page.
2. Compute the break-even point in sales dollars for the month based on your actual data.
3. Considering the fact that the company met its B750,000 sales budget for the month, the president is shocked at the results shown on your income statement in (1) above. Prepare a brief memo for the president explaining why both the operating results and the break-even point in sales dollars are different from what was budgeted.

CASE 6-32 Break-Evens for Individual Products in a Multiproduct Company [LO6, LO9]

Cheryl Montoya picked up the phone and called her boss, Wes Chan, the vice president of marketing at Piedmont Fasteners Corporation: "Wes, I'm not sure how to go about answering the questions that came up at the meeting with the president yesterday."

"What's the problem?"

"The president wanted to know the break-even point for each of the company's products, but I am having trouble figuring them out."

"I'm sure you can handle it, Cheryl. And, by the way, I need your analysis on my desk tomorrow morning at 8:00 sharp in time for the follow-up meeting at 9:00."

Piedmont Fasteners Corporation makes three different clothing fasteners in its manufacturing facility in North Carolina. Data concerning these products appear below:

	Velcro	Metal	Nylon
Normal annual sales volume	100,000	200,000	400,000
Unit selling price	\$1.65	\$1.50	\$0.85
Variable cost per unit	\$1.25	\$0.70	\$0.25

Total fixed expenses are \$400,000 per year.

All three products are sold in highly competitive markets, so the company is unable to raise its prices without losing unacceptable numbers of customers.

The company has an extremely effective lean production system, so there are no beginning or ending work in process or finished goods inventories.

Required:

1. What is the company's over-all break-even point in total sales dollars?
2. Of the total fixed costs of \$400,000, \$20,000 could be avoided if the Velcro product were dropped, \$80,000 if the Metal product were dropped, and \$60,000 if the Nylon product were dropped. The remaining fixed costs of \$240,000 consist of common fixed costs such as administrative salaries and rent on the factory building that could be avoided only by going out of business entirely.
 - a. What is the break-even point in units for each product?
 - b. If the company sells exactly the break-even quantity of each product, what will be the overall profit of the company? Explain this result.