Solutions Manual
for

COST ACCOUNTING

Creating Value for Management Fifth Edition

MICHAEL MAHER

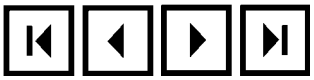
University of California, Davis

Table of Contents

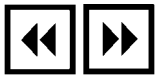
How to Use this File

This file contains an entire manual for your use. Within this file, there have been *hypertext links* created to allow you to quickly access various subjects. The following chart is to be used as a guide as to how to move about this document easily. Please print out a copy for future reference.

The magnifying glass with the "+" enlarges your page. The magnifying glass containing "–" reduces your page. (Click on the icon, then click on your page.)



These four icons are used to access pages one at a time. The first icon, ⏮, allows you to move quickly to the first page of the book. The last icon, ⏭, allows you to move quickly to the last page. The two icons, ◀▶, allow you to view pages one at a time, forwards and backwards.



The *Go Back* and *Go Forward* buttons allow you to retrace your steps in a document, moving to each view in the order visited.

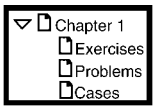
The *Actual Size* button displays the page at 100 percent.

The *Fit Page* button scales the entire page down to fit within the window.

The *Fit Width* button scales the page width to fill the window.

Click the *Page Only* button (first on the left side of toolbox) to close the overview area of the window. Only the page you want to view will be showing.

Click the *Bookmarks and Page* button (second from the left on toolbox) to open the overview area and display bookmarks created for the document. (See next entry for bookmark explanation.)



This is a sample of the bookmarks that will display when the *Bookmarks and Page* button is used.

The arrow to the left of the list indicates that it is a folder containing subentries associated with its main entry. All other icons are indicators of *hypertext links*. To use the hypertext links, simply click on the icon and it will automatically transport you to that location.

Chapter 1
Cost Accounting: How Managers Use Cost Accounting Information

Solutions to Review Questions

1–1.

C Analysis of divisional performance

A Costing for income tax purposes

B Determining how many units to produce in the coming week

1–2.
Descriptions of the six business functions in the value chain are as follows:

1. **Research and development:** the creation and development of ideas related to new products, services, or processes.
2. **Design:** the detailed development and engineering of products, services, or processes.
3. **Production:** the collection and assembly of resources to produce a product or deliver a service.
4. **Marketing:** the process that informs potential customers about the attributes of products or services, and leads to the sale of those products or services.
5. **Distribution:** the process established to deliver products or services to customers.
6. **Customer Service:** product or service support activities provided to customers.

1–3.
Value-added activities are activities that customers perceive as adding utility to the goods or services they purchase. Nonvalue-added activities do not add value to the goods or services.

1–4.
Differential costs are important for managerial decision making, but other cost data can provide management with additional important information. For example, inventory values and costs of goods sold are important for income tax and financial reporting purposes as well as for most bonus and cost-plus contracting purposes. Costs for performance evaluation are not necessarily differential costs. Companies try to recover all costs, hence some estimate of total costs is needed. (This could be an opportunity to discuss short-run and long-run costs with students, noting that in the long run, all costs must be covered.)

1–5.
Costs that could be shared among housemates might include a share of the rent, food, utilities, and other related costs. Costs that would differ with the addition of another person are the differential costs. These differential costs might include food. It would be necessary to negotiate an agreement between you and the other person considering all factors. For example, should you split the total costs or charge only the differential costs of the additional person.

Businesses are often faced with similar decisions on finding the appropriate cost base for splitting costs. There are no generally accepted accounting rules for determining appropriate shared costs in either situation. Hence, it is important to specify arrangements about costs precisely when agreements are made.

1–6.
Performance evaluation systems are designed for a specific company's needs. The systems should be flexible to adapt to the circumstances which exist in that company. A common set of accounting principles would tend to reduce flexibility and usefulness of these systems. As long as all parties know the accounting basis used by the system, the exact rules can be designed in whatever manner the parties deem appropriate.

1–7.
Most utilities are characterized by the need to install a substantial amount of equipment to meet peak loads. The peak load for the telephone company is during business hours, particularly in the mid-morning. At other times this equipment is operating at less than capacity. That is, there are lines available for use. By encouraging users to shift their usage from the peak times to such off-peak hours as evenings, nights and weekends, less equipment is required and the existing equipment is utilized more heavily.

The considerations in the decision would include: (a) the savings from not having to purchase more equipment; (b) the revenues that could be generated on off-peak hours when existing equipment would be sufficient; (c) the revenues that could be generated from telephone calls that would not be made at all at the higher prices; and (d) the costs of operating the telephone system in off-peak hours. Offsetting these benefits would be the reduction in revenues from calls that would be made during off-peak hours even if full rates were in effect. Apparently the telephone company has found that the benefits outweigh the loss in revenues from using off-peak rates.

1–8.
While a manager, and not the controller, has the business expertise to make management decisions, the decisions will not be good ones if the manager does not understand the data used to make them. For example, the manager may be working with the costs of a product, and not realize which costs are fixed and which are variable. The controller understands the types of data that are available, the rules used to accumulate the data, and the limitations that exist on the data. Therefore, the manager and the controller need to interact in the decision-making process. The controller can provide the manager with the relevant data, and an explanation of its suitable uses. The manager then can make better decisions.

1–9.
In decision making, managers or supervisors may wish to take actions that are not economically justifiable. In most cases, upon receipt of a well-developed cost analysis, a production manager is satisfied whether an action is feasible. If the action is not economically justifiable, the matter is dropped without conflict. In a few cases, however, managers may wish to pursue a project because of personal reasons, and hope to have an economic analysis to support it. In these situations, care must be taken to ascertain the economic merits of the plan, and, if the plan cannot be justified on economic grounds, the manager must make the case for the project on another basis. The final responsibility for the decision rests with the manager. Therefore, plans that cannot be justified on a cost analysis basis may still be adopted at the discretion of management.

In the control area, the accountant is charged with the responsibility of making certain that plans are executed in an optimal and efficient manner. In some cases this may be viewed as placing restrictions on management actions. Under these circumstances the manager may view the accounting function as placing too great a constraint on the manager while the accountant may view the manager as attempting to circumvent the rules.

1–10.
The marketing people at Lever Bros. rely on accounting information for decisions. For example, accounting provides information about distribution costs, and helps marketing people determine the cost of materials and packaging if management decides to change a product.

1–11.
The nonvalue-added activity—the amount of time employees are idle during normal trash pickups as a result of their trucks breaking down—occurred because workers did not inspect their trucks at the end of shifts for maintenance and repairs needs. So trucks broke down during normal trash pickups. The threat of privatization created incentives probably because workers thought they would not be hired by private trash collectors (or their working conditions would be worse or their wages would be lower).

1–12.
The answer is simple—you get what you motivate.

Solutions to Exercises

1–13. (20 min.) *Cost data for managerial purposes.*

a. Differential costs are costs that would change; that is, the materials costs in this situation. Other costs would presumably not be affected by the change in materials. Other issues include the quality and availability of the new materials.

   Differential costs next year are $.90 (= $6.00 – $5.10) calculated as follows:

	Cost	
	Old Materials	New Materials
Next year	$6.00	$5.10 (85% x $6.00)

b. Management would use the information to help decide whether to use the new materials. Management would also want to know the quality of materials and the reliability of the vendor.

1–14. (20 min.) *Cost data for managerial purposes: Technology, Inc.*

This exercise demonstrates the importance of determining what is differential, and not being misled by the "bottom line."

All costs except corporate administration would be differential. Here is the calculation of the lost contribution:

Revenue lost	$430,000
Costs saved (excluding corporate admin.)	393,000
Contribution lost, before taxes	37,000
Taxes saved (40% of the lost contribution)	14,800
Net contribution lost	$ 22,200

Management must decide whether the contribution toward corporate administrative costs and profits is sufficient to justify continuing operations, or whether it should seek a more profitable line of business. Unless there is a better alternative use of corporate resources, the division should not be closed in the short run, despite the reported loss on the financial statement.

1–15.

Cost	*Value Chain Classification*
Transportation	distribution
Utilities	production
Salaries	research and development
Visits to customer	customer service
Packaging design	design
Advertising	marketing

1–16.

Cost	*Value Chain Classification*
Redesign	design
Promotion materials	marketing
Equipment	research and development
Sales people bonuses	marketing
Postage	distribution
Labor	production

1–17. (20 min.) *Ethics and altering the books: Amos & Associates*

a. The unofficial CMA answer comments specifically on competence, confidentiality, integrity, and objectivity with respect to the Standards of Ethical Conduct for Management Accountants. Basically, Elizabeth has a responsibility to perform professional duties in accordance with relevant laws, standards, and GAAP. Elizabeth must communicate both favorable as well as unfavorable information fairly and objectively. She must disclose all relevant information that could influence the users' understanding of the reports.

b. Elizabeth should first follow Amos & Associates' established policy on the resolution of ethical conflict. (Assuming there is one!) If there isn't an established policy Elizabeth should confront the next higher level of management that she believes is not involved in the altering of figures. This could be the Chairman of the Board of Directors. If the matter remains unresolved she should take the issue to the Audit Committee and the Board of Directors. Perhaps Elizabeth should seek confidential discussion with an objective advisor. When all levels of internal review have been exhausted without satisfactory results, Elizabeth should resign and submit an informative memorandum to the chairman of the Board of Directors.

Solutions to Problems

1–18. (30 min.) *Responsibility for ethical action: Toxic, Inc.*

a. As a management accountant Paul has a responsibility to perform his professional duties with competence in accordance with relevant laws and regulations. Clearly, dumping toxic waste is a violation of the law. As such, Paul might have a legal responsibility to take some action. As a professional, he must communicate both favorable and unfavorable information in an objective and fair manner. Thus, he cannot simply ignore the fact that Toxic, Inc. is involved in illegal toxic dumping.

b. The first possible course of action was to discuss the situation with the controller. This is an appropriate approach to the problem. Always take a problem to your immediate supervisor first. If the controller indicates that he is aware of the situation and that you should not worry about it, then take the matter up with your controller's superior. Move up the layers of management until someone is concerned and will deal with the problem.

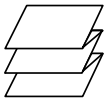
   As for the second course of action, the proper authorities should be notified by someone in the company. The local newspaper, however, is not the proper authority. Paul should discuss the matter with the Board of Directors only after exhausting possibilities of discussing the matter with internal management.

1–19. (30 min.) *Ethics and inventory obsolescence: Angioplasty Corporation.*

a. The controller has a responsibility to perform his duties in a competent manner, one that is in accordance with relevant laws, regulations, technical standards, and generally accepted accounting principles. The controller's lack of action regarding the overstatement of inventory is a violation of professional responsibilities.

b. Linda should first follow Angioplasty's established policy on the resolution of ethical conflict. (Assuming there is one!) If there isn't an established policy, Linda might want to mention to the controller the fact that she believes both the CFO and the external auditors are unaware of the inventory overvaluation. If she is uncomfortable mentioning this to the controller, she should talk directly to the CFO instead. If the situation is still unresolved then Linda should bring it to the attention of the Audit Committee and the Board of Directors. Perhaps Linda should seek confidential discussion with an objective advisor to clarify the issues and possible courses of action.

   When all levels of internal review have been exhausted without satisfactory results, Linda should resign and submit an informative memorandum to the chairman of the Board of Directors. Except where legally prescribed, the disclosure of such information to outsiders (the media, regulatory bodies, external auditors, etc.) is considered inappropriate.



1–20. (30 min.) *Cost data for managerial purposes: Wegrow Fruits, Inc.*

This problem demonstrates the ambiguity of cost-based contracting and, indeed, the measurement of "cost."

Recommended prices may range from the $42.90 suggested by NASA to the $53.35 charged by Wegrow Fruits, Inc. The key is to negotiate the cost-based price prior to the signing of the contract. Considerations which affect the base costs are reflected in the following options:

Options:

A. Only the differential costs could be considered as the cost basis.

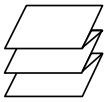
B. The total cost per case for normal production of 80,000 cases could be used as the cost basis.

C. The total cost per case for production of 120,000 cases, excluding marketing costs, could be used as the cost basis.

D. The total cost per case for production of 120,000 cases, including marketing costs, could be used as the cost basis.

Costs		*Unit Cost Options (One Unit = One Case of Fang)*			
		A	*B*	*C*	*D*
Materials (var.)	$12	$12	$12	$12	$12
Labor (var.)	19	19	19	19	19
Supplies (var.)	8	8	8	8	8
Indirect costs (fixed)	440,000	N/A	5.50	3.67	3.67
Marketing (var)	2	N/A	2	N/A	2
Administrative (fixed)	160,000	N/A	2	1.33	1.33
Per case cost basis		$39	$48.50	$44	$46
Per case price (Cost + 10%)		$42.90	$53.35	$48.40	$50.60

We believe the most justifiable options exclude marketing costs and reflect the actual production level of 120,000 cases. These are Options A and C. (As stockholders in Wegrow Fruits, Inc., we would prefer Option C.)



1–21. (30 min.) *Cost data for managerial purposes: Ante Division.*

This problem demonstrates the ambiguity in measuring "costs."

Ante Division's controller included the "per unit" fixed costs, calculated for allocation purposes under normal production volume, when it calculated the per unit cost of the additional production. The controller charged Beta Division on that basis, ignoring the differential costs as a basis for inter-division sales.

Possible options available are as follows:

A. Use the full per unit cost for normal production of 25,000 units.

B. Use only differential costs as the cost basis.

C. Use differential costs plus a share of fixed costs, based on actual production volume (with Beta's order) of 37,500 units.

Costs		*Unit Cost Options:*		
		A	*B*	*C*
Direct materials (var.)	$.80	$.80	$.80	$.80
Direct Labor (var.)	4.00	4.00	4.00	4.00
Other variable costs	.40	.40	.40	.40
Fixed costs	90,000.00	3.60	N/A	3.00
Per unit cost		$8.80	$5.20	$ 8.20
Cost plus 20%		10.56	6.24	9.84
Total price (5,000 units)		$52,800	$31,200	$49,200

If fixed costs are not differential and Ante has no alternative uses of the excess capacity (between 37,500 units available capacity and 25,000 units used), then Option B is the most defensible. Options A and C overstate the differential cost of production which could inappropriately affect Beta's decisions about buying internally or externally, or about pricing its product, among other decisions.

1–22. (20 min.) *Cost data for managerial purposes: Amanda's Coffee, Inc.*

a.

	(1) *Baseline*	*(2)* *Alternative with Ice Cream*	*(3)* *Differential Revenues and Costs*
Sales revenue.....	$38,000	$78,000	$40,000
Costs:			
Food.....	$15,000	$35,000	$20,000
Labor.....	12,000	18,000[a]	6,000
Utilities	2,000	3,000[a]	1,000
Rent	4,000	4,800[b]	800
Other costs.....	2,000	2,400[b]	400
Manager's salary....	6,000	6,000	–0–
Total costs.....	41,000	69,200	28,200
Operating profit.....	$ (3,000)	$ 8,800	$11,800

[a]Fifty percent higher than baseline.

[b]Twenty percent higher than baseline

b. The decision to expand and offer ice cream results in differential profits of $11,800, so it is profitable to expand. Note that only differential costs and revenues figured in the decision. The supervisor's salary did not change, so it was not included.

1–23. (25 min.) *Cost data for managerial purposes: Change Management Corporation.*

a. The following differential costs would be incurred:

Consultant Labor	$134,000	Given
Equipment Lease.....	4,200	5% of $84,000
Supplies.....	5,400	10% of $54,000
Other Costs	5,700	15% of $38,000
Total Costs	$149,300	

b. Technically, since acceptance of the contract would add $700 to operating profits, it would seem that acceptance of the contract is called for. Of course, as a practical matter the amount is so small that it would probably not be worth the effort.

c. Other factors would include (1) whether this will enable the company to get into a new, profitable line of business; (2) what other opportunities the company has for expanding; and (3) whether the contract will provide for more revenues in the future. In short, the company must consider the long run as well as the first year's results.

Chapter 2
Cost Concepts and Behavior

Solutions to Review Questions

2–1.
Cost is a more general term that refers to a sacrifice of resources and may be either an opportunity cost or an outlay cost. An expense is the write-off of an outlay cost against revenues in a particular accounting period and usually pertains only to external financial reports.

2–2.
Product costs are those costs that can be more easily attributed to products, while period costs are those costs that are more easily attributed to time periods. The determination of product costs varies depending on the approach used: full absorption, variable, or managerial costing. See page 44 for definitions of product cost using each approach.

2–3.
Yes. The costs associated with goods sold in a period are not expected to result in future benefits. They provided revenues for the period in which the goods were sold; therefore, they are expensed for financial accounting purposes.

2–4.
Both accounts represent the cost of the goods acquired from an outside supplier, which include all costs necessary to ready the goods for sale (in merchandising) or production (in manufacturing).

The merchandiser expenses these costs as the product is sold, as no additional costs are incurred. The manufacturer transforms the purchased materials into finished goods and charges these costs, along with conversion costs to production (work in process inventory). These costs are expensed when the finished goods are sold.

2–5.

Direct materials:	Materials in their raw or unconverted form which become an integral part of the finished product are considered direct materials. In some cases, materials are so immaterial in amount that they are considered part of overhead.
Direct labor:	Costs associated with labor engaged in manufacturing activities. Sometimes this is considered as the labor which is actually responsible for converting the materials into finished product. Assembly workers, cutters, finishers and similar “hands on” personnel are classified as direct labor.
Manufacturing overhead:	All other costs directly related to product manufacture. These costs include the indirect labor and materials, costs related to the facilities and equipment required to carry out manufacturing operations, supervisory costs, and all other direct support activities.

2–6.
Step costs change with volume in steps, such as when supervisors are added. Mixed costs have elements of both fixed and variable costs. Utilities and maintenance are often mixed costs.

2–7.
Total variable costs change in direct proportion to a change in volume (within the relevant range of activity). Total fixed costs do not change as volume changes (within the relevant range of activity).

2–8.
Prime costs are direct. Direct materials and direct labor are by their very nature directly related to the product. Some overhead costs are treated as indirect for practical reasons—while they might be directly associated with the product (e.g., incidental materials), they are too small in value to be separately measured. Other overhead costs, such as the occupancy costs of the manufacturing plant, are clearly indirect.

2–9.
Unit costs are averages only at a *given level of production*, the relevant range. Since some costs do not change, i.e. fixed costs, within certain production ranges, the average (fixed costs divided by number of units) will change as production changes within those ranges. Thus, to determine the incremental (or differential) cost per unit one must look at the change in *total* costs because of a change in production activity and divide by the total number of units.

2–10.
Marketing and administrative costs are treated as period costs and expensed for financial accounting purposes in both manufacturing and merchandising organizations.

2–11.
Knowing which costs would be assigned to the film was important for people who were paid based on a percentage of the film's net profits. Had they understood how costs of Forrest Gump were to be defined, they may have insisted on a share of revenues or a flat fee instead of profit sharing.

2–12.
Answer will depend on the restaurant studied. Examples are: materials—food; labor—meal preparers; overhead—maintenance, utilities, lease on building. Provocative questions include the following: Are napkins and condiments direct or indirect materials? Is the restaurant manager direct or indirect labor? Then ask if the way one categorizes these costs affects managerial decisions. (Probably not.)

2–13.
Examples: labor—instructors' salaries; overhead—departmental office staff's salaries.

Solutions to Exercises

2–14. (15 min.) *Basic concepts.*

Cost Item	*Fixed (F) Variable (V)*	*Period (P) Product (R)*
a. Transportation-in costs on materials purchased	V	R
b. Assembly line workers wages	V	R
c. Property taxes on office buildings for administrative staff	F	P
d. Salaries of top executives in the company	F	P
e. Overtime pay for assembly workers	V	R
f. Sales commissions	V	P
g. Sales personnel office rent	F	P
h. Sales supervisory salaries	F	P
i. Controller's office rental	F	P
j. Administrative office heat and air conditioning	F	P

2–15. (10 min.) *Basic concepts.*

a. Factory heating and air conditioning.	C
b. Production supervisor's salary.	C
c. Transportation-in costs on materials purchased.	P
d. Assembly line worker's salary.	B
e. Raw materials used in production process.	P
f. Indirect materials.	C

2–16. (15 min.) *Basic concepts.*

Concept	*Definition*	
Period costs	5.	Costs that can be more easily attributed to time intervals.
Indirect costs	9.	Costs that cannot be directly related to a cost object.
Fixed costs	11.	Costs that do not vary with the volume of activity.
Opportunity costs	7.	The lost benefit from the best forgone alternative.
Outlay costs	6.	Past, present or near-future cash flow.
Direct costs	10.	Costs that can be directly related to a cost object.
Expense	3.	The cost charged against revenue in a particular accounting period.
Cost	2.	A sacrifice of resources.
Variable costs	1.	Costs that vary with the volume of activity.
Full-absorption cost	8.	Costs used to compute inventory value according to GAAP.
Product costs	4.	Costs that are part of inventory.

2–17. (15 min.) *Basic concepts.*

Cost Item	*Fixed (F) Variable (V)*	*Period (P) Product (R)*
a. Factory security personnel	F	R
b. Utilities in controller's office	F	P
c. Factory heat and air conditioning	F	R
d. Power to operate factory equipment	V	R
e. Depreciation on furniture for company executives	F	P

2–18. (15 min.) *Prepare statements for a merchandising company: PC, Inc.*

PC, Inc.
Income Statement
For the Year Ended December 31, This Year

Revenue	$5,000,000
Cost of goods sold (see statement below)	3,060,000
Gross margin	1,940,000
Marketing and administrative costs	1,600,000
Operating profit	$ 340,000

PC, Inc.
Cost of Goods Sold Statement
For the Year Ended December 31, This Year

Beginning inventory		$ 500,000
Purchases	$2,600,000	
Transportation-in	260,000	
Total cost of goods purchased		2,860,000
Cost of goods available for sale		3,360,000
Ending inventory		300,000
Cost of goods sold		$3,060,000

2–19. (30 min.) *Prepare statements for a manufacturing company.*

We recommend setting up either T-accounts or equations to solve for the missing data.

a.

Materials Inv.	
12,250	
x	23,850
13,600	

Beginning direct materials inventory	+	Direct materials purchased	=	Direct materials used	+	Ending direct materials inventory

12,250 + X = $23,850 + $13,600

X = $23,850 + $13,600 – $12,250

X = $25,200

b.

Finished Goods Inventory	
2,250	
x	28,000
3,250	

Beginning finished goods inventory	+	Cost of goods manufactured	=	Cost of goods sold	+	Ending finished goods inventory

2,250 + X = $28,000 + $3,250

X = $28,000 + $3,250 – $2,250

X = $29,000

c.

Work in Process Inventory	
16,150	
x	29,000 *
14,500	

Beginning work in process inventory	+	Total manufacturing cost	=	Cost of goods manufactured	+	Ending work in process inventory

16,150 + X = $29,000* + $14,500

X = $29,000 + $14,500 – $16,150

X = $27,350

*From solution to part b.

2–19. (continued)

Sebastian Company
Cost of Goods Sold Statement
For the Year Ended December 31

Beginning work in process inventory			$16,150
Manufacturing costs:			
Direct materials:			
Beginning inventory	$12,250		
Purchases	25,200[a]		
Materials available	37,450		
Less ending inventory	13,600		
Direct materials used		$23,850	
Other manufacturing costs		3,500*	
Total manufacturing costs			27,350[c]
Less ending work in process inv.			14,500
Cost of goods manufactured			29,000[b]
Beginning finished goods inventory			2,250
Finished goods available for sale			31,250
Less ending finished goods inventory			3,250
Cost of goods sold			$28,000

Letters (a), (b), and (c) refer to amounts found for requirements *a, b,* and *c.*
*Difference between total manufacturing costs and direct materials used:
$3,500 = $27,350 – $23,850.

2–20. (30 min.) *Prepare statements for a manufacturing company: Nishimoto Machine Tools Company*

We recommend setting up T-accounts or equations to solve for the missing data.

a.

Direct Materials Inventory	
32,800	
x	173,200
36,600	

Beginning direct materials inventory + Direct materials purchases = Direct materials used + Ending direct materials inventory

$\$32,800 + X = \$173,200 + \$36,600$

$X = \$173,200 + \$36,600 - \$32,800$

$X = \$177,000$

b.

Finished Goods Inventory	
14,600	
x	600,000
15,000	

Beginning finished goods inventory + Cost of goods manufactured = Cost of goods sold + Ending finished goods inventory

$\$14,600 + X = \$600,000 + \$15,000$

$X = \$600,000 + \$15,000 - \$14,600$

$X = \$600,400$

c.

Work in Process Inventory	
36,200	
x	600,400*
35,400	

Beginning work in process inventory + Total manufacturing costs = Cost of goods manufactured + Ending work in process inventory

$\$36,200 + X = \$600,400 + \$35,400$

$X = \$600,400 + \$35,400 - \$36,200$

$X = \$599,600$

*From part b.

2–20. (continued)

Nishimoto Machine Tools Company
Cost of Goods Sold Statement
For the Year Ended December 31

Beginning work in process inventory			$ 36,200
Manufacturing costs:			
Direct materials:			
Beginning inventory	$ 32,800		
Purchases	177,000[a]		
Materials available	209,800		
Less ending inventory	36,600		
Direct materials used		$173,200	
Other manufacturing costs		426,400*	
Total manufacturing costs			599,600[c]
Total costs of work in process			635,800
Less ending work in process			35,400
Cost of goods manufactured			600,400[b]
Beginning finished goods inventory			14,600
Finished goods available for sale			615,000
Ending finished goods inventory			15,000
Cost of goods sold			$600,000

Letters (a), (b), and (c) refer to amounts found in solutions to requirements *a, b,* and *c.*
*Difference between total manufacturing costs and direct materials used.

2–21. (30 min.) *Prepare statements for a manufacturing company: Alexis Company.*

Alexis Company
Statement of Cost of Goods Sold
For the Year Ended December 31

Work in process, Jan. 1			$ 30,800
Manufacturing costs:			
Direct materials:			
Beginning inventory, Jan. 1	$ 36,800		
Add material purchases	44,600		
Direct materials available	81,400		
Less ending inventory, Dec. 31	38,000		
Direct materials used		$ 43,400	
Direct labor		71,200	
Manufacturing overhead:			
Supervisory and indirect labor	28,800		
Indirect materials and supplies	12,600		
Plant utilities and power	47,000		
Manufacturing building depreciation	54,000		
Property taxes, manufacturing plant	16,800		
Total manufacturing overhead		159,200	
Total manufacturing costs			273,800
Total cost of work in process during the year			304,600
Less work in process, Dec. 31			26,200
Costs of goods manufactured during the year			278,400
Beginning finished goods, Jan. 1			21,800
Finished goods inventory available for sale			300,200
Less ending finished goods inventory, Dec. 31			18,000
Cost of goods sold			$282,200

Alexis Company
Income Statement
For the Year Ended December 31

Sales revenue		$420,800
Less: Cost of goods sold		282,200
Gross margin		138,600
Administrative costs	$88,600	
Marketing costs (sales commissions)	30,400	
Total marketing and administrative costs		119,000
Operating profit		$ 19,600

2–22. (30 min.) *Prepare statements for a manufacturing company: Tots' Toy Factory.*

Tots' Toy Factory
Statement of Cost of Goods Sold
For the Year Ended December 31

Beginning work in process, Jan. 1			$ 6,600
Manufacturing costs:			
Direct materials:			
Beginning inventory, January 1	$ 8,200		
Add purchases	10,150		
Direct materials available	18,350		
Less ending inventory, December 31	9,000		
Direct materials put into process		$ 9,350	
Direct labor		16,300	
Manufacturing overhead:			
Supervisory and indirect labor	6,200		
Indirect materials and supplies	2,150		
Plant utilities and power	10,750		
Manufacturing building depreciation	12,500		
Property taxes, manufacturing plant	3,700		
Total manufacturing overhead		35,300	
Total manufacturing costs			60,950
Total cost of work in process during the year			67,550
Less work in process, December 31			5,550
Costs of goods manufactured during the year			62,000
Beginning finished goods, January 1			4,450
Finished goods inventory available for sale			66,450
Less ending finished goods inventory, December 31			4,050
Cost of goods sold			62,400

Tots' Toy Factory
Income Statement
For the Year Ended December 31

Sales revenue		$97,200
Less: Cost of goods sold (per statement)		62,400
Gross margin		34,800
Administrative costs	$21,550	
Sales commissions	7,100	
Total marketing and administrative costs		28,650
Operating profit		$ 6,150

2–23. (30 min.) *Prepare statements for a manufacturing company: Carey's Cakes.*

Carey's Cakes
Statement of Cost of Goods Sold
For the Year Ended December 31

Beginning work in process, Jan. 1			$ 7,700
Manufacturing costs:			
Direct materials:			
Beginning inventory, Jan. 1	$ 8,600		
Add: Purchases	11,560		
Transportation-in	1,150		
Direct materials available	21,310		
Less ending inventory, Dec. 31	8,050		
Direct materials used		$13,260	
Direct labor		19,350	
Manufacturing overhead:			
Supervisory and indirect labor	10,950		
Supplies and indirect materials	1,450		
Heat, light and power—plant (77.6% of total)	9,700		
Depreciation—manufacturing (80% of total)	12,000		
Property taxes—plant (80% of total)	3,150		
Total manufacturing overhead		37,250	
Total manufacturing costs			69,860
Total cost of work in process during the year			77,560
Less work in process, Dec. 31			6,210
Costs of goods manufactured during the year			71,350
Beginning finished goods, Jan. 1			3,550
Finished goods available for sale			74,900
Less ending finished goods, Dec. 31			4,950
Cost of goods sold			$ 69,950

2–23. (continued)

Carey's Cakes
Income Statement
For the Year Ended December 31

Sales revenue		$131,150
Less: Cost of goods sold (per statement)		69,950
Gross profit		61,200
Marketing and administrative costs:		
Depreciation (20% of total)	$3,000	
Heat, light and power (22.4% of total)	2,800	
Property taxes (25% of total)	1,050	
Administrative salaries	18,000	
Other administrative costs	4,350	
Marketing costs	16,350	
Total marketing and administrative costs		45,550
Operating profit		$ 15,650

2–24. (20 min.) *Cost behavior for decision making: Excalabur Company.*

Variable costs:	
Direct materials used ($35,200 x 1.4)	$ 49,280
Direct labor ($66,500 x 1.4)	93,100
Indirect materials and supplies ($8,000 x 1.4)	11,200
Power to run plant equipment ($7,100 x 1.4)	9,940
Total variable costs	$163,520
Fixed costs:	
Supervisory salaries	31,100
Plant utilities (other than power to run plant equipment)	9,600
Depreciation on plant and equipment	4,800
Property taxes on building	6,500
Total fixed costs	52,000
Total costs for 1,400 units	$215,520

$$\text{Unit cost} = \frac{\$215{,}520}{1{,}400 \text{ units}} = \$153.94$$

$$\text{Unit variable cost} = \frac{\$163{,}520}{1{,}400 \text{ units}} = \$116.80$$

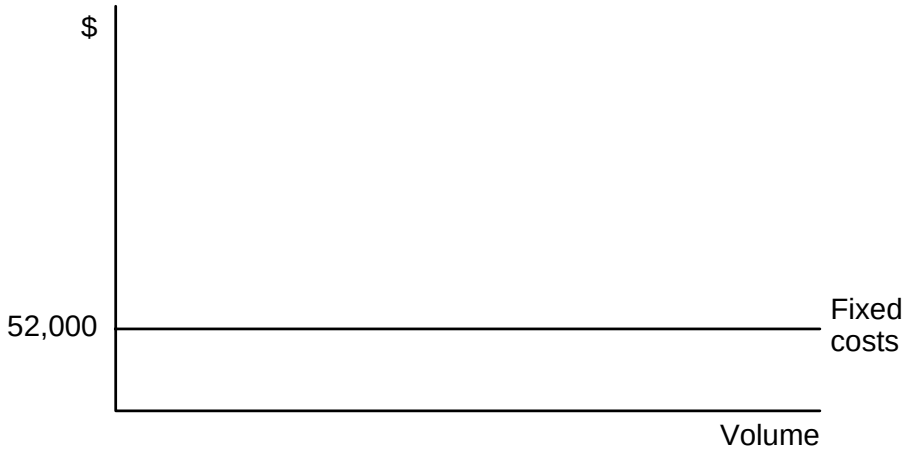
Check to see if variable cost per unit is the same at 1,400 units as at 1,000 units:

$$\text{Unit variable cost at 1,000 units} = \frac{\$35{,}200 + \$66{,}500 + \$8{,}000 + \$7{,}100}{1{,}000} = \frac{\$116{,}800}{1{,}000} = \$116.80$$

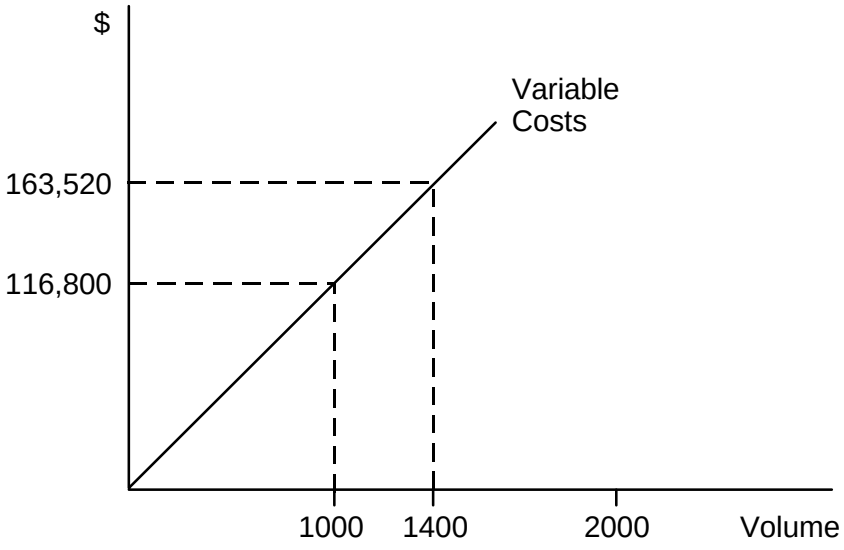
2–25. (20 min.) *Cost behavior: Excalabur Company.*

Fixed costs = $52,000 = $31,100 + $9,600 + $4,800 + $6,500

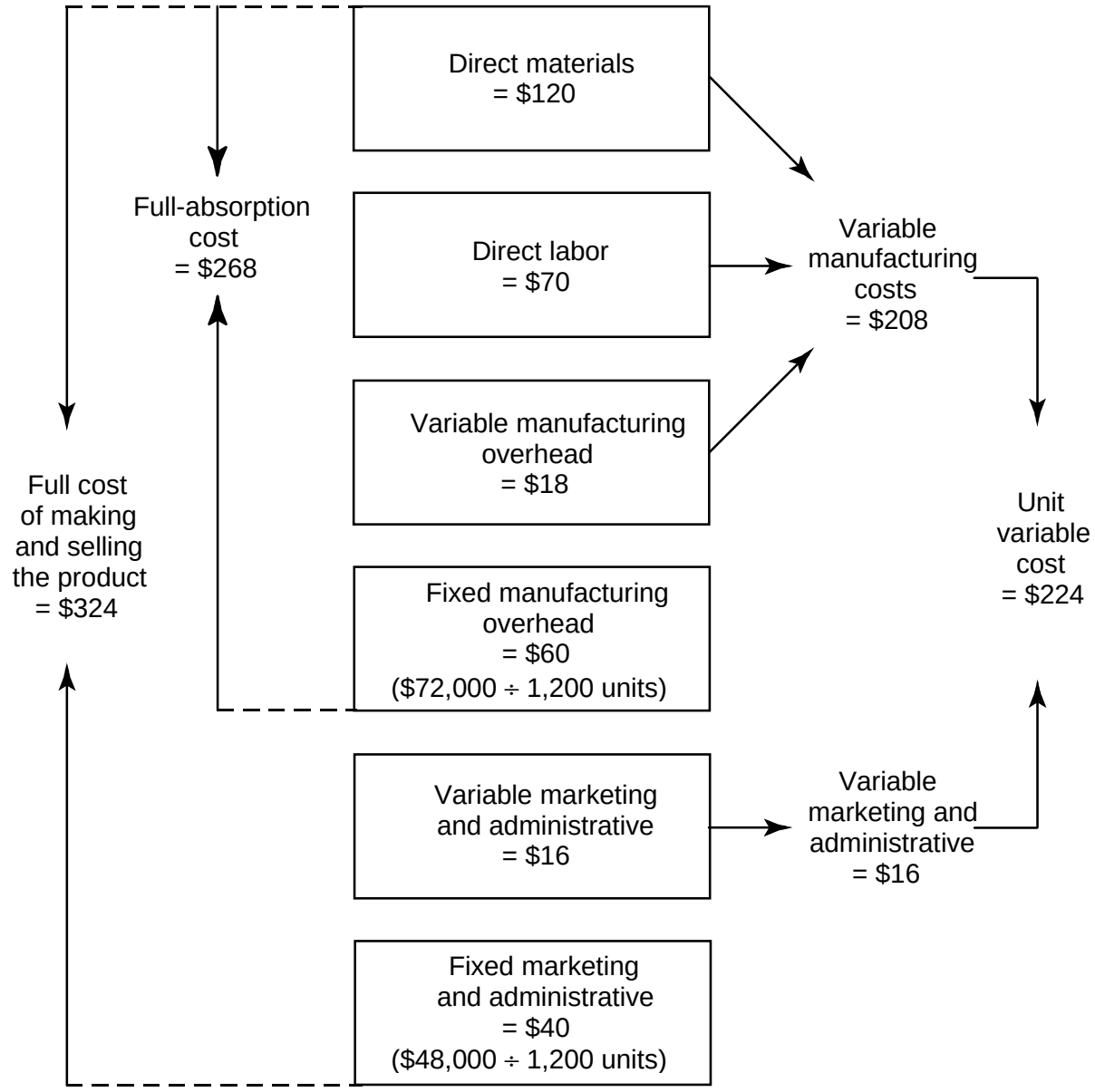
Fixed cost = $52,000 = $31,100 + $9,600 + $4,800 + $6,500



Variable costs = $116.80 per unit = ($163,520 ÷ 1,400 units) or ($116,800 ÷ 1,000 units)



2–26. (30 min.) *Components of full costs.*



a. Variable manufacturing cost:
$120 + $70 + $18 = $208

b. Variable cost:
$120 + $70 + $18 + $16 = $224

c. Full absorption cost:
$120 + $70 + $18 + ($72,000/1,200 units) = $268

d. Full cost:
$120 + $70 + $18 + $16 + ($72,000/1,200 units) + ($48,000/1,200 units) = $324

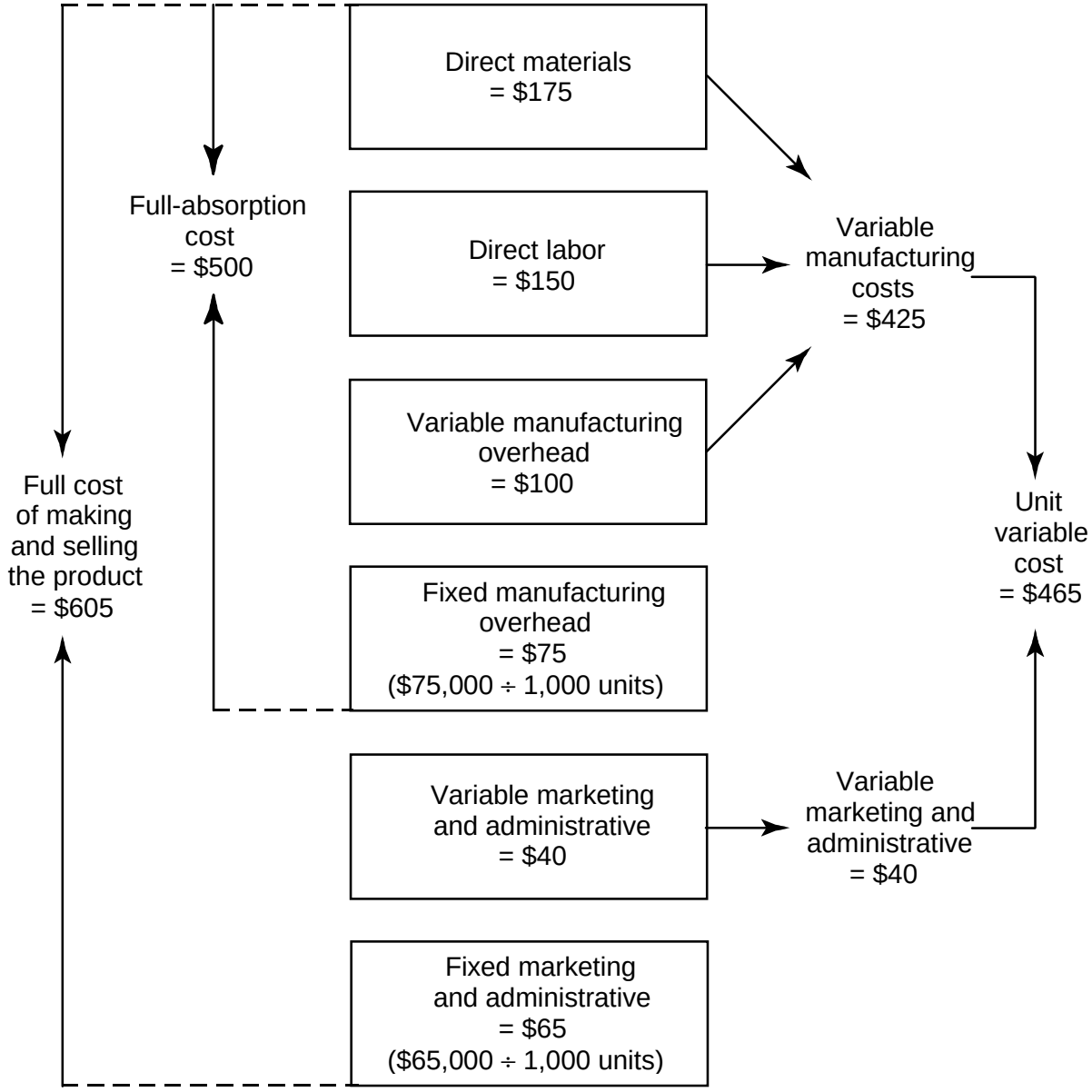
2–27. (15 min.) *Components of full costs.*

a. Product cost per unit:
$120 + $70 + $18 + ($72,000/1,200 units) = $268

b. Period costs for the period:
$48,000 + ($16 x 1,200 units) = $67,200

2–28. (30 min.) *Components of full cost: Young Company.*

a.

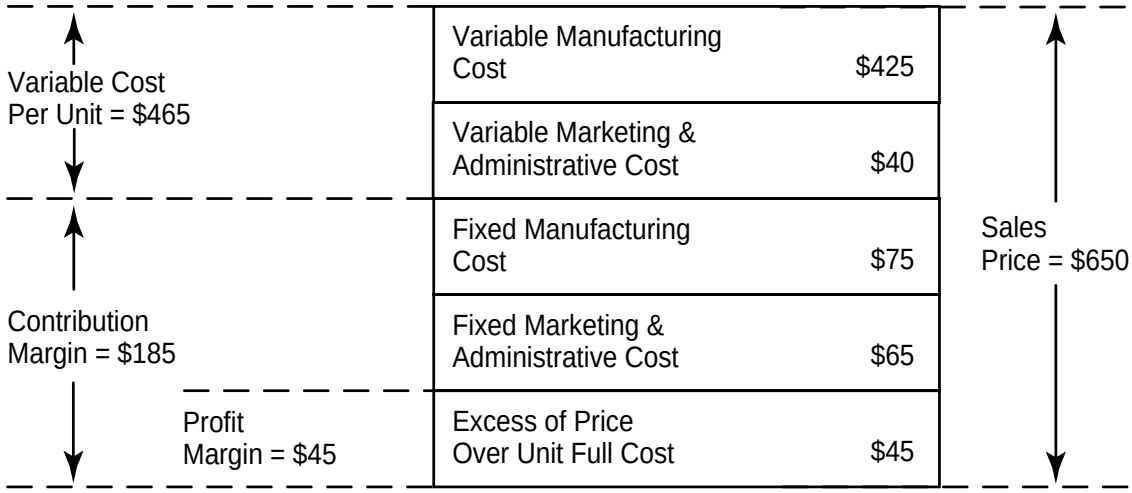


1. Variable manufacturing cost:
   $175 + $150 + $100 = $425
2. Variable cost:
   $175 + $150 + $100 + $40 = $465
3. Full-absorption cost:
   $175 + $150 + $100 + ($75,000/1,000 units) = $500
4. Full cost:
   $175 + $150 + $100 + ($75,000/1,000 units) + ($65,000/1,000 units) + $40 = $605

2–28. (continued)

b. Profit margin and gross margin (per unit at 1,000 units):

Profit margin and contribution margin (per unit at 1,000 units):



2–29. (20 min.) *Components of full costs: Service organizations: Joe's Tax Service*

a. Variable costs for month + (Fixed costs for the month/hours) = Cost per unit
(a unit is an hour billed.)
$20 + ($55,000/20,000 hours) = $22.75

b. 1. Price per hour – Cost per unit = Profit margin
$35 – $22.75 = $12.25

2. Price per hour – Variable costs per hour = Contribution margin
$35 – $20 = $15

2–30. (30 min.) *Value income statement: Top Videos*

a.

Top Videos
Value Income Statement
For the month ending August 31

	Nonvalue-added activities	*Value-added activities*	*Total*
Sales Revenue		$200,000	$200,000
Cost of merchandise:			
Cost of goods sold		110,000	110,000
Defective goods destroyed	$ 10,000		10,000
Gross margin	(10,000)	90,000	80,000
Operating expenses:			
Employee salaries and wages	8,000	32,000	40,000
Supervisory salaries	2,000	8,000	10,000
Rent, utilities, and other store costs*		20,000	20,000
Operating income/(loss)	$(20,000)	$ 30,000	$ 10,000

*A portion of these costs might be nonvalue-added if they can be reduced by reducing nonvalue-added activities.

b. The store manager can implement quality control procedures to identify defective goods as they reach the store rather than waiting for customers to complain or return the defective goods. In addition, the store manager can contact the studios that produce the videos and ask for improved quality (the studios may have the upper hand if they are the only ones distributing the videos—especially the popular videos!)

2–31. (30 min.) *Value income statement: Atul's Restaurant*

a.

Atul's Restaurant
Value Income Statement
For the month ending November 30

	Nonvalue-added activities	*Value-added activities*	*Total*
Sales Revenue		$130,000	$130,000
Cost of food and beverages			
Food and beverages		34,000	34,000
Food returned by patrons	$ 3,000		3,000
Food rejected in the kitchen	2,000		2,000
Gross margin	(5,000)	96,000	91,000
Operating expenses:			
Employee salaries and wages	9,000	51,000	60,000
Supervisory salaries	1,800	10,200	12,000
Rent, utilities, and other store costs*		16,000	16,000
Operating income/(loss)	$(15,800)	$ 18,800	$ 3,000

*A portion of these costs might be nonvalue-added if they can be reduced by reducing nonvalue-added activities.

b. The restaurant manager can buy better quality goods from suppliers to prevent food waste in the kitchen. The chef can also inspect the prepared food before taking it to the customer to reduce the number of returned meals.

2–32. (30 min.) *Value income statement: Tastee Ice Cream Shop*

a.

Tastee Ice Cream Shop
Value Income Statement
For the month ending July 31

	Nonvalue-added activities	*Value-added activities*	*Total*
Sales Revenue		$60,000	$60,000
Cost of ice cream	4,400	17,600	22,000
Gross margin	(4,400)	42,400	38,000
Operating expenses:			
Employee salaries and wages	2,000	6,000	8,000
Supervisory salaries	3,000	9,000	12,000
Rent, utilities, and other store costs*		9,000	9,000
Operating income/(loss)	$(9,400)	$18,400	$ 9,000

*A portion of these costs might be nonvalue-added if they can be reduced by reducing nonvalue-added activities.

b. The ice cream shop manager should consider purchasing a backup generator for future power outages—especially if these outages are common.

Solutions to Problems

2–33. (30 min.) *Cost concepts: Multiple choice.*

a. The answer is (1).

Prime costs = direct materials + direct labor

Direct materials = beginning inventory + purchases – ending inventory
= $9,000 + $21,000 – $7,500
= $22,500

Direct labor is given as $15,000

Prime costs = $22,500 + $15,000
= $37,500

b. The answer is (3).
Conversion costs = direct labor + manufacturing overhead
Conversion costs = $15,000 +$20,000 = $35,000

c. The answer is (2).

Total manufacturing costs = direct materials + direct labor + manufacturing overhead
= $22,500 (from a above) + $15,000 + $20,000
= $57,500

d. The answer is (1).

Cost of goods manufactured = beginning WIP + total manufacturing costs – ending WIP
= beginning WIP + direct materials + direct labor + manufacturing overhead – ending WIP
= $4,500 + $22,500 + $15,000 + $20,000 – $3,000
= $4,500 + $57,500 (from c above) – $3,000
= $59,000

e. The answer is (4).

Cost of goods sold	=	Cost of goods manufactured	+	Beginning finished goods inventory	–	Ending finished goods inventory

= $59,000 (from d above) + $13,500 – $18,000
= $54,500

2–34. (30 minutes) *Cost Concepts: multiple choice.*

a. The answer is (3)

variable manufacturing cost = manufacturing overhead + direct labor + direct materials
= $30 + $10 + $40
= $80

b. The answer is (4)

full unit cost = all unit fixed costs + all unit variable costs
= $20 + $15 + $5 + $30 + $10 + $40
= $120

c. The answer is (2)

variable cost = all variable unit costs
= $5 + $30 + $10 + $40
= $85

d. The answer is (1)

full absorption cost = fixed and variable manufacturing overhead + direct labor + direct materials
= $15 + $30 + $10 + $40
= $95

e. The answer is (2).

Prime cost = direct labor + direct materials
= $10 + $40
= $50