Managerial Accounting Creating Value in a Dynamic Business Environment 12th edition Hilton Solutions Manual

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CHAPTER 1
The Crucial Role of Managerial Accounting in a Dynamic Business Environment

FOCUS ON ETHICS (Located before the Chapter Summary in the text.)

The focus-on-ethics inset for Chapter 1 is the IMA Statement of Ethical Professional Practice. Instructors can use this list of ethical principles and standards to lead a class discussion. The discussion can also range to consideration of how these standards may have been violated by accountants and managers involved in the various ethical scandals uncovered over the past several years. It is also useful to discuss the pros and cons of the procedures that IMA suggests for its members when they believe they know about ethical lapses in their organizations.

ANSWERS TO REVIEW QUESTIONS

1-1 **The explosion in e-commerce will affect managers in significant ways. One effect will be a drastic reduction in paper work. Millions of transactions between businesses are now being conducted electronically with no hard-copy documentation. Along with this method of communicating for business transactions comes the very significant issue of information security. Businesses need to find ways to protect confidential information in their own computers, in cloud computing data centers, and while moving across the internet, while at the same time sharing the information necessary to complete transactions. Another effect of e-commerce is the dramatically increased speed with which business transactions can be conducted. In addition, there will be dramatic changes in the way managerial accounting procedures are carried out, one example being cloud-based budgeting, which is the enterprise-wide and electronic completion of a company's budgeting process using cloud-based software and data storage.**

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1-2 Plausible goals for the organizations listed are as follows:

(a) Amazon.com: (1) To achieve and maintain profitability, and (2) to grow on-line sales of their many products. Amazon is also famous (infamous) for wanting to have every product in the world on its site.

(b) American Red Cross: (1) To raise funds from the general public sufficient to have resources available to meet any disaster that may occur, and (2) to provide assistance to people who are victims of a disaster anywhere in the world on short notice.

(c) General Motors: (1) To earn income sufficient to provide a good return on the investment of the company's stockholders, and (2) to provide the highest-quality product possible.

(d) Wal-Mart: (1) To penetrate the retail market in virtually every location in the United States, and (2) to grow over time in terms of number of retail locations, total assets, and earnings. Also, to be competitive with Amazon in the e-retail space.

(e) City of Seattle: (1) To maintain an urban environment as free of pollution as possible, and (2) to provide public safety, police, and fire protection to the city's citizens.

(f) Hertz: (1) To be a recognizable household name associated with rental car services, and (2) to provide reliable and economical transportation services to the company's customers.

1-3 The four basic management activities are listed and defined as follows:

(a) Decision making: Choosing among the available alternatives.

(b) Planning: Developing a detailed financial and operational description of anticipated operations.

(c) Directing operations: Running the organization on a day-to-day basis.

(d) Controlling: Ensuring that the organization operates in the intended manner and achieves its goals.

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1-4 Examples of the four primary management activities in the context of a national fast-food chain are as follows:

(a) Decision making: Choosing among several possible locations for a new fast-food outlet.

(b) Planning: Developing a cost budget for the food and paper products to be used during the next quarter in a particular fast-food restaurant.

(c) Directing operations: Developing detailed schedules for personnel for the next month to provide counter service in a particular fast-food restaurant.

(d) Controlling: Comparing the actual cost of paper products used during a particular month in a restaurant with the anticipated cost of paper products for that same time period.

1-5 Examples of the objectives of managerial-accounting activity in an airline company are described below:

(a) Providing information for decision making and planning, and proactively participating as part of the management team in the decision making and planning processes: Managerial accountants provide estimates of the cost of adding a flight on the route from Dallas to Miami and actively participate in making the decision about adding the flight.

(b) Assisting managers in directing and controlling operations: Managerial accountants provide information about the actual costs of flying the company's Asian routes during a particular month.

(c) Motivating managers and other employees toward the organization's goals: A budget is provided for the cost of handling baggage at Chicago O'Hare Airport. The budget is given to the airline's baggage handling manager, who is expected to strive to achieve the budget.

(d) Measuring the performance of activities, subunits, managers, and other employees within the organization: Quarterly income statements are prepared for each of the airline's major geographical sectors, and these income reports are used to evaluate the earnings performance of each sector during the relevant time period.

(e) Assessing the organization's competitive position and working with other managers to ensure the organization's long-run competitiveness in its industry: Information about industry-wide performance standards is obtained and compared with the airline's own performance. For example, how does the airline stack up against its competitors in ticket prices, on-time departures, mishandled baggage, customer complaints, and safety?

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1-6 Four important differences between managerial accounting and financial accounting are listed below:

(a) Managerial-accounting information is provided to managers within the organization, whereas financial-accounting information is provided to interested parties outside the organization.

(b) Managerial-accounting reports are not required and are unregulated, whereas financial-accounting reports are required and must conform to generally accepted accounting principles.

(c) The primary source of data for managerial-accounting information is the organization's basic accounting system, plus various other sources. These sources include such data as rates of defective products manufactured, physical quantities of material and labor used in production, occupancy rates in hotels and hospitals, and average takeoff delays in airlines. The primary source of data for financial-accounting information is almost exclusively the organization's basic accounting system, which accumulates financial information.

(d) Managerial-accounting reports often focus on subunits within the organization, such as departments, divisions, geographical regions, or product lines. These reports are based on a combination of historical data, estimates, and projections of future events. Financial-accounting reports focus on the enterprise in its entirety. These reports are based almost exclusively on historical transaction data.

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1-7 The cost-accounting system is one part of an organization's overall accounting system, the purpose of which is to accumulate cost information. Cost information accumulated by the cost-accounting system is used for both managerial-accounting and financial-accounting purposes. Managerial accounting is the broad task of preparing information for making decisions about planning, directing, and controlling an organization's operations.

1-8 Managers in line positions are directly involved in the provision of services or the production of goods in an organization. Managers in staff positions support the organization's overall objectives, but they are indirectly involved in operations. Examples of line positions in a university are the president, who is the university's chief executive officer, and the business school dean, who is responsible for running the "division" called the business school. Examples of staff positions in a university are the university counsel, who is the university's chief lawyer, and the director of maintenance, who is charged with maintaining the university's facilities.

1-9 An organization's controller (or comptroller) is the chief managerial and financial accountant. The controller usually is responsible for supervising the personnel in the accounting department and for preparing the information and reports used in both managerial and financial accounting. The treasurer typically is responsible for raising capital and safeguarding the organization's assets. Among the treasurer's responsibilities is the management of an organization's investments, credit policy, and insurance coverage.

1-10 A college or university could use the balanced scorecard as a management tool just like any other business. There is one important difference, however, between a profit-seeking enterprise and a nonprofit organization like a university. A profit-seeking enterprise generally has long-term profitability as its foremost goal, and the other points on the balanced scorecard are oriented toward helping the enterprise achieve that goal of profitability. Universities, on the other hand, usually have multiple goals, which are sometimes in competition with each other. For example, a land-grant university may have teaching, research, and public service as its three primary goals. Nevertheless, it is possible for a college or university to develop performance measures for each of the areas in the balanced scorecard. Some examples follow:

- ***Financial:*** Amount of the unrestricted endowment supporting the university's activities, and the extent to which the university operates with a balanced budget.
- ***Internal business processes:*** Tenure rates for faculty, and the extent to which the university's facilities are up to date and well maintained.
- ***Customer***: Class evaluations by students, and job placement rates for students.
- ***Learning and growth:*** Dollars of research grants obtained, and publication of journal articles and books by faculty.

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1-11 This quote from a managerial accountant at Caterpillar suggests that managerial accountants are *physically located* throughout an organization where the day-to-day work is being done, rather than being sequestered off by themselves as was the tendency some years ago. Managerial accountants are increasingly *deployed* as key members of management teams.

1-12 Managerial-accounting information often brings to the attention of managers important issues that need their managerial experience and skills. In many cases, managerial-accounting information will not answer the question or solve the problem, but rather make management aware that the issue or problem exists. In this sense, managerial accounting sometimes is said to serve an attention-directing role.

1-13 Both manufacturing and service industry firms are engaged in production. The primary difference between these types of companies is that manufacturing firms produce inventoriable goods, whereas the services produced by service industry firms are not inventoriable. Services, such as air transportation or hotel service, are consumed as they are produced.

1-14 (a) *Practical capacity* is an organization's upper limit on production of goods or services, calculated after taking into account normal occurrences such as equipment downtime, employee fatigue, illness, and breaks, and planned interruptions in production such as holidays and shutdowns.

(b) *Cost of resources supplied* is a measure of the spending on production resources, such as labor, machinery, and various overhead costs, that have been made available for in support of the production planned during a particular period of time.

(c) *Cost of resources used* is a consumption-oriented measure that attempts to quantify the spending on the production resources used to create the actual amount of product or service output. It considers only the amount of resources provided that were actually needed for production.

(d) *Cost of resources unused* is the difference between *cost of resources supplied* and *cost of resources used*, i.e., the cost of the various production resources that were available for production but not needed for the amount of output actually produced. Often referred to as *cost of excess capacity*.

1-15 The statement is accurate: capacity supplied in the current period but not used for production is gone. If a pizza maker is available for four hours to make pizzas but only one pizza is ordered, she still has to be paid for four hours. There is no way to store that capacity to use it another time. However, if an experienced store manager, realizing it is going to be a slow night, tells her after an hour to "go home and we'll schedule you for three extra hours later in the week," then the capacity is never supplied, and therefore it does not go unused and is not "lost forever."

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1-16 **CMA stands for Certified Management Accountant. This title is the professional certification for managerial accountants administered by the Institute of Management Accountants. The requirements for becoming a CMA include fulfilling specified educational requirements, obtaining relevant experience, and successfully passing the CMA examination.**

1-17 **(a) Competence: Ongoing development of knowledge and skills, performance of duties in accordance with relevant laws, adherence to regulations and technical standards, and preparation of complete and clear reports for management.**

(b) Confidentiality: Refraining from disclosing confidential information, except when legally required, and from using confidential information for unethical or illegal advantage (personal or professional).

(c) Integrity: Contribute to a positive ethical culture by mitigating conflicts of interest, avoiding activity or conduct that would prejudice carrying out duties ethically or discredit the profession, and placing the integrity of the profession above personal interests.

(d) Credibility: Communication of information fairly, objectively, and fully, including delays or deficiencies, as well as professional limitations or constraints that would preclude responsible judgment or successful performance.

1-18 **Non-value-added costs are the costs of activities in the value chain that can be eliminated with no deterioration of product quality, performance, or perceived value.**

1-19 **As a quick glance at the internet will make clear, Disney's ESPN both produces and broadcasts a variety of sporting events via several cable channels. There are many ways in which big data and data analytics are important to ESPN, and answers could include (but are not limited to) such uses as: analyzing viewer demographics by region of the country to choose which football games to broadcast; studying viewer behavior patterns to help sell advertising time more effectively; and analyzing employee performance across several dimensions to determine the characteristics of the most effective employees. A successful answer must specify the insight that such an analysis would provide for the benefit of the company.**

1-20 **Managerial accounting is just as important in nonprofit organizations as it is in profit-seeking enterprises. Managers in nonprofit organizations also need managerial-accounting information for decision making, planning, directing, and controlling operations. While the organization's goal is not profit, it still has important goals relating to its mission that its managers need to achieve with support from managerial accounting tools and perspectives. A common saying is, "No money, no mission!"**

1-21 **Becoming the low-cost producer in an industry requires a clear understanding by management of the costs incurred in its production process. Reports and analysis of these costs are a primary function of managerial accounting.**

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1-22 According to Miriam-Webster, a professional is a person who conforms to the technical or ethical standards of a profession. And the Oxford English Dictionary describes a professional as someone who is "competent, skillful, or assured." According to these definitions, a managerial accountant would be a professional if she conducted herself according to the IMA's principle and standards of ethical professional practice.

1-23 Some activities in the value chain of a manufacturer of cotton shirts are as follows:

(a) Growing and harvesting cotton

(b) Transporting raw materials

(c) Designing shirts

(d) Weaving cotton material

(e) Manufacturing shirts

(f) Transporting shirts to retailers

(g) Advertising cotton shirts

Some activities in the value chain of an airline are as follows:

(a) Making reservations and ticketing

(b) Designing the route network

(c) Scheduling

(d) Purchasing aircraft

(e) Maintaining aircraft

(f) Running airport operations, including handling baggage

(g) Flying passengers and cargo

1-24 Strategic cost management is the process of understanding and managing, to the organization's advantage, the cost relationships among the activities in an organization's value chain.

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SOLUTIONS TO EXERCISES

EXERCISE 1-25 (20 MINUTES)

1. Estimates of any operating costs associated with the proposed luxury cars would be relevant. For example, estimates of the cost of gasoline, routine maintenance, and insurance on the new vehicles would be useful.
2. Data about the cost of maintaining the machine weekly or biweekly would be relevant. In addition, the production manager should consider information about the likely rates of defective products under each maintenance alternative.
3. Estimates of the cost of lost merchandise due to shoplifting and the cost of employing security personnel would be relevant to this decision.
4. Estimates of building costs for the library addition as well as estimates of benefits to the population from having the addition would be useful. Estimating the benefits may require value judgments about the benefits to the public from having additional library space and more books.

EXERCISE 1-26 (25 MINUTES)

1. Developing a bonus reward system for managerial personnel is an example of motivating managers and other employees toward the organization's goals. To be effective, the bonus system must provide incentives for managers to work toward achieving those goals.
2. Comparing actual and planned costs is consistent with two objectives of managerial accounting activity: (1) assisting managers in controlling operations, and (2) measuring the performance of activities, subunits, managers, and other employees within the organization.
3. Determining manufacturing costs is related to all of the objectives of managerial accounting. It is especially closely related to the objective of providing information for decision making and planning.
4. Measuring inventory costs is most closely associated with the first two objectives of managerial accounting activity: (1) providing information for decision making and planning, and (2) assisting managers in directing and controlling operational activities. Since inventory costs are used in external financial reports, they are also relevant to measuring the performance of managers and subunits within the organization.
5. Estimating costs is particularly relevant to the objective of providing information for decision making and planning.

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EXERCISE 1-26 (CONTINUED)

6. **Measuring operating costs, such as wages and property taxes, is relevant to all of the objectives of managerial accounting activity, because a clear understanding of costs is necessary for a clear understanding of profit or other financial outcomes.**
7. **Comparing operating statistics such as those mentioned for a hotel is particularly relevant to the following objective of managerial accounting: Assessing the organization's competitive position and working with other managers to ensure the organization's long-run competitiveness in its industry.**

EXERCISE 1-27 (30 MINUTES)

Answers will vary widely for this exercise, depending on the company chosen by each student. Companies' financial goals often include profitability, earnings per share, growth in the stock price, sales growth, and so forth. Managerial accounting can make an important contribution to all of these goals.

EXERCISE 1-28 (30 MINUTES)

Answers will vary widely for both requirements in this exercise, depending on the company chosen by each student (or group of students).

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SOLUTIONS TO PROBLEMS

PROBLEM 1-29 (25 MINUTES)

1. Managerial accounting can be of significant benefit when it comes to solving the company's problems. Managerial accounting is defined as the process of identifying, measuring, analyzing, interpreting, and communicating information in pursuit of an organization's goals. Several of the problems lie in this area and may be attributed to a lack of formal planning, controlling, directing, and decision-making expertise.

   For example, bulging inventories and the fact that growth "…has occurred in spite of what we've done" may indicate the absence of a formal planning system—one that involves developing a detailed financial and operational description of anticipated activities. Dangerously low cash balances and the need for short-term loans may be eliminated by the use of a cash budget, which depicts cash inflows and outflows over a period of time. The addition of ski equipment may or may not have been the proper decision. Did Nelson correctly identify all possible alternatives and then make the proper selection?

   The canoe-building activities and white-water rafting trips may be losing money. Are costs skyrocketing hopelessly out of control? It is difficult to tell because the income statement does not provide adequate information—it is a summary of past transactions for the entire business. A performance report that identifies the company's major areas of activity would be of assistance, especially if the report measured budgeted vs. actual costs and highlighted (directed attention toward) significant deviations for management attention. If such a report were prepared, managers could better direct operational activities and ensure that the company achieves its goals (i.e., the control function).

2. Yes, a cross-functional team would be useful in this situation. Several of the company's problems affect multiple functional areas within the firm. For example, bulging inventories, which impact profitability and cash balances, may be the result of poor ordering practices and/or ineffective marketing programs. Issues related to the operation of a seasonal business may be overcome with the selection of different "off-season" product lines and aggressive marketing campaigns. These problems, coupled with the fact that a number of the key executives manage in "silos" and lack the "big-picture" outlook for the firm, seem to indicate the desirability of teams that have different employee backgrounds and interests (such as marketing, operations, and finance) represented.

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PROBLEM 1-29 (CONTINUED)

3. **Nelson's business is operating in the tourism industry, which is notoriously cyclical. In that context alone, there are many constrained resources: for example, number of rafts for raft trips and employees to guide them. In the busiest season, the summer months of July and August, Nelson can probably keep a large number of rafts and guides profitably busy. Other times of the year, he has to lay off some of the guides and some of the rafts sit empty because he offers fewer rafting trips each week. But he is fortunate that these are resources that can be scaled to meet demand: some rafts can be put in storage and every rafting guide knows that his employment is seasonal. Still, resource capacity has to be considered in managing the company.**

   What about other resources that are not so easily adjusted? The buildings, for example. They are a resource to the company and many of their costs (depreciation, for instance) continue year round. Does that mean that a t-shirt sold in winter should be viewed as less profitable (or marked up more) than a t-shirt sold in summer, because there are fewer t-shirts sold to cover the cost of the building? Managerial accounting says no, that the extra cost of the building in winter is unused capacity and shouldn't count against the cost of the t-shirt.

   There are many other resources that could be listed. For each, you should describe what causes the capacity issue.

4. **Data analytics is an attempt, via data governance and data science, to rigorously analyze the operations of a company and the broader context it operates in. It is an empirical, evidence-based approach to understanding a company's operations and as such is indeed the opposite of "gut feeling." This does not mean that the intuition (aka gut feeling) of experienced managers is without value. However, data analytics can provide greater confidence about their intuition and often can sometimes find patterns and relationships that even the most experience manager would miss or misinterpret.**

   Nelson's case is a good illustration of a problem that occurs in many start-ups. Founders can manage "by the seat of their pants" until the company hits a certain size and then their intuition fails. It simply cannot process the "big data." Data analytics could help Nelson by, for example, showing the characteristics of customers most and least likely to convert to internet sales, allowing him to tailor his communications accordingly and perhaps suggesting how he might succeed with a targeted internet approach without alienating his face-to-face customers.

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PROBLEM 1-30 (25 MINUTES)

1. **The balanced scorecard is a business model that helps to assess a firm's competitive position and ensures that the firm is progressing toward long-term survival. Although balanced scorecards differ from one firm to the next, most have a combination of financial measures, customer measures, internal business process measures, and measures of learning and growth.**

2. **Functional areas for the airline include marketing, finance, operations (e.g., maintenance, reservations, customer service, and scheduling), human resources, purchasing, accounting, planning, and information systems/technology.**

3. **Financial measures:**
   - **Net income**
   - **Earnings per share**
   - **Passenger revenue per seat mile**
   - **Operating expenses per seat mile**
   - **Cost per meal served**
   - **Revenue growth**

   Customer-measures:
   - **Load factors**
   - **Number of passenger complaints**
   - **Average wait time when calling reservations center**
   - **Number of bags lost**
   - **Market share**
   - **Response time for resolving customer problems**

   Internal Business Process measures:
   - **Percentage of on-time arrivals**
   - **Percentage of on-time departures**
   - **Average trip length (in miles)**
   - **Percentage of tickets sold through travel agents, reservation agents, and the Internet**
   - **Number of cities/new cities served**
   - **Number of aircraft in fleet**
   - **Average age of aircraft in fleet**
   - **Aircraft turnaround time between flights**

   Learning and Growth measures:
   - **Enhancements to product line (new class of service)**
   - **New unique features of frequent-flier club**
   - **Employee turnover**
   - **Employee satisfaction scores**
   - **Employee training programs**

4. **Yes. By focusing on only one factor, other important facets of the business are ignored, which could lead to long-run problems. For example, paying too much attention to load factors may result in a decrease in profitability (e.g., the sale of too many inexpensive seats). A significant focus on profitability could result in the airline providing marginal service to its customers (poor meals; long wait times when calling reservations centers; a large number of lost bags by a small, poorly-trained crew, and so forth).**

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PROBLEM 1-31 (45 MINUTES)

1. Allen's considerations are determined largely by her position as an accountant, with responsibilities to AccuSound Corporation, others in the company, and herself. Allen's job involves collecting, analyzing, and reporting operating information. Although not responsible for product quality, Allen should exercise initiative and good judgment in providing management with information having potentially adverse economic impact.

   Allen should determine whether the controller's request violates her professional or personal standards or the company's code of ethics, should the company have such a code. As Allen decides how to proceed, she should protect proprietary information and should not violate the chain of command by discussing this matter with the controller's superiors.

2. a. The controller has reporting responsibilities and should protect the overall company interests by encouraging further study of the problem by those in his or her department, by informing superiors in this matter, and by working with others in the company to find solutions.

   b. The quality control engineer has responsibilities for product quality and should protect overall company interests by continuing to study the quality of reworked rejects, by informing the plant manager and his staff in this matter, and by working with others in the company to find solutions.

   c. The plant manager and his or her staff have responsibilities for product quality and cost and should protect overall company interests by exercising the stewardship expected of them. Plant management should be sure that products meet quality standards. Absentee owners need information from management, and the plant management staff have a responsibility to inform the board of directors elected by the owners of any problems that could affect the well-being of the firm.

3. Allen needs to protect the interests of the company, others in the company, and herself. Allen is vulnerable if she conceals the problem and it eventually surfaces. Allen must take some action to reduce her vulnerability. One possible action would be to obey the controller and prepare the advance material for the board without mentioning or highlighting the probable failure of reworks. Because this approach differs from the long-standing practice of highlighting information with potentially adverse economic impact, Allen should write a report to the controller detailing the probable failure of reworks, the analysis made by her and the quality control engineer, and the controller's instructions in this matter.

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PROBLEM 1-32 (30 MINUTES)

1. Line activities are primary to the purpose of the organization. They are the activities that create and distribute the goods and services of the organization. Line reporting refers to the reporting relationship between different hierarchical management levels in line activities (e.g., the reporting relationship between the general supervisor and the plant manager).

   Staff activities are services provided by departments in the organization in support of its line activities. The role of the division controller in the division is an example of a staff activity. The reporting relationship between the division controller and the division manager is an example of a staff reporting relationship.

2. a. The division controller is responsible to both the corporate controller and the division manager. The corporate controller assigns the division controller to the division and has final responsibility for promotion and salary. Thus, the division controller is an employee of the controller's department and reports to the corporate controller. At the same time, the division controller serves as a staff resource to the division manager. The division controller is required to file an independent commentary on the division's financial results, which could well differ from the division manager's commentary.

   The division manager evaluates the division controller's performance and makes salary and promotion recommendations to the corporate controller.

   b. The motivation of the division controller would be affected by this dual reporting relationship. The division controller is being evaluated by two people whose responsibilities are not always congruent. What may be considered good performance by one person may be considered unsatisfactory by the other. Thus, the division controller will have difficulty knowing what factors influence his or her progress in the company. The circumstances described in the problem do not provide positive motivation for the division controller.

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SOLUTION TO CASE

CASE 1-33 (40 minutes)

1. Andrea Nolan's ethical responsibilities require that she not tell her friend, Rob Borman, about Progressive's cash flow problems. Nolan, as a management accountant, must comply with the following standards for ethical conduct that apply here:

Confidentiality:

- **Keep information confidential except when disclosure is authorized or legally required.**
- **Inform all relevant parties regarding appropriate use of confidential information. Monitor to ensure compliance.**
- **Refrain from using confidential information for unethical or illegal advantage.**

Integrity:

- **Mitigate actual conflicts of interest. Regularly communicate with business associates to avoid apparent conflicts of interest. Advise all parties of any potential conflicts of interest.**
- **Refrain from engaging in any conduct that would prejudice carrying out duties ethically.**
- **Abstain from engaging in or supporting any activity that might discredit the profession.**
- **Contribute to a positive ethical culture and place integrity of the profession above personal interests.**

2. Nolan has an ethical responsibility to inform Progressive that Borman has decided to postpone the paper order. As a management accountant, Nolan must comply with the following standards of ethical conduct that apply here:

Confidentiality:

- **Keep information confidential except when disclosure is authorized or legally required.**
- **Inform all relevant parties regarding appropriate use of confidential information. Monitor to ensure compliance.**
- **Refrain from using confidential information for unethical or illegal advantage.**

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CASE 1-33 (CONTINUED)

Integrity:

- **Mitigate actual conflicts of interest. Regularly communicate with business associates to avoid apparent conflicts of interest. Advise all parties of any potential conflicts of interest.**
- **Refrain from engaging in any conduct that would prejudice carrying out duties ethically.**
- **Abstain from engaging in or supporting any activity that might discredit the profession.**
- **Contribute to a positive ethical culture and place integrity of the profession above personal interests.**

Credibility:

- **Communicate information fairly and objectively.**
- **Provide all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.**
- **Report any delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.**
- **Communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.**

3. Nolan should follow the established policies for resolution of ethical conflict at Progressive, if any are available. If consistent with the policies, or if no policies are available, Nolan could try to resolve this matter by discussing the situation with her immediate supervisor. She could tell her supervisor about her long-time friendship with Borman. If a satisfactory resolution to the problem is not achieved, Nolan could submit the matter to the next-higher managerial level. (IMA *Statement of Ethical Professional Practice*, "Resolving Ethical Issues")

She should also make it clear that she has not and will not disclose confidential company information to Borman or any other outside party except when authorized or legally obligated to do so. (IMA *Statement of Ethical Professional Practice*, "II. Confidentiality," #1)

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CHAPTER 2
Basic Cost Management Concepts

FOCUS ON ETHICS (Located before the Chapter Summary in the text.)

Is "just following orders" an acceptable excuse?

The WorldCom controller allegedly did not perform his professional duties in accordance with relevant laws, regulations, and ethical standards for practitioners of managerial accounting and financial management. The justification that the controller makes for this alleged unethical duping of investors, that he was ordered to do so by senior management, is an insufficient defense of his actions. He was legally and ethically obliged to find and correct accounting errors, and to make an accurate representation of the firm's financial position to his fellow managers, the board of directors, and the investing public. Sometimes, because of negligence or conflicts of interest, senior management may accidentally or purposely give unethical instructions. The controller is obliged under these circumstances to uphold his professional integrity and insist on an appropriate treatment of the accounting information.

ANSWERS TO REVIEW QUESTIONS

2-1 **Product costs are costs that are associated with manufactured goods until the time period during which the products are sold, when the product costs become expenses. Period costs are expensed during the time period in which they are incurred.**

2-2 **Product costs are also called inventoriable costs because they are assigned to manufactured goods that are inventoried until a later period, when the products are sold. The product costs remain in the Work-in-Process or Finished-Goods Inventory account until the time period when the goods are sold.**

2-3 **The most important difference between a manufacturing firm and a service industry firm, with regard to the classification of costs, is that the goods produced by a manufacturing firm are inventoried, whereas the services produced by a service industry firm are consumed as they are produced. Thus, the costs incurred in manufacturing products are treated as product costs until the period during which the goods are sold. Most of the costs incurred in a service industry firm to produce services are operating expenses that are treated as period costs.**

2-4 **Product costs include the backpack's direct material (e.g., fabric, stitching, zippers and pulls), direct labor involved in production, and various manufacturing overhead costs (e.g., electricity, insurance on the plant, and depreciation on plant and equipment).**

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2-5 **The four types of production processes are as follows:**

- **Job shop: Low production volume; little standardization; one-of-a-kind products. Examples include custom home construction, feature film production, and ship building.**
- **Batch: Multiple products; low volume. Examples include construction equipment, tractor trailers, and cabin cruisers.**
- **Assembly: A few major products; higher volume. Examples include kitchen appliances and automobile assembly.**
- **Continuous flow: High production volume; highly standardized commodity products. Examples include food processing, textiles, lumber, and chemicals.**

2-6 **The cost of idle time is treated as manufacturing overhead because it is a normal cost of the manufacturing operation that should be spread out among all of the manufactured products. The alternative to this treatment would be to charge the cost of idle time to a particular job that happens to be in process when the idle time occurs. Idle time often results from a random event, such as a power outage. Charging the cost of the idle time resulting from such a random event to only the job that happened to be in process at the time would overstate the cost of that job.**

2-7 **Overtime premium is included in manufacturing overhead in order to spread the extra cost of the overtime over all of the products produced, since overtime often is a normal cost of the manufacturing operation. The alternative would be to charge the overtime premium to the particular job in process during overtime. In most cases, such treatment would overstate the cost of that job, since it is only coincidental that a particular job happened to be done on overtime. The need for overtime to complete a particular job results from the fact that other jobs were completed during regular hours.**

2-8 **The phrase "different costs for different purposes" refers to the fact that the word "cost" can have different meanings depending on the context in which it is used. Cost data that are classified and recorded in a particular way for one purpose may be inappropriate for another use.**

2-9 **The city of Tampa would use cost information for planning when it developed a budget for its operations during the next year. Included in that budget would be projected costs for police and fire protection, street maintenance, and city administration. At the end of the year this budget would be used for cost control. The actual costs incurred would be compared to projected costs in the budget. City administrators would also use cost data in making decisions, such as where to locate a new fire station.**

2-10 **A fixed cost remains constant in total across changes in activity, whereas the total variable cost changes in proportion to the level of activity.**

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2-11 The fixed cost per unit declines as the level of activity (or cost driver) increases. Specifically, it declines at a decreasing rate: going from one unit produced to two divides the fixed cost per unit in half; going from two units to three divides it into thirds; three to four into fourths, etc. The cost per unit is reduced because the total fixed cost, which does not change as activity changes, is spread over a larger number of activity units.

2-12 The variable cost per unit remains constant as the level of activity (or cost driver) changes. Total variable costs change in proportion to activity, and the additional variable cost when one unit of activity is added is the variable cost per unit.

2-13 Airline cost drivers associated with a particular flight could include any volume- or operations-oriented measure that is likely to be associated with increases and decreases in different kinds of costs associated with that flight. Examples might include the number of passengers, number of flights, weight of freight carried, number of gate personnel, number of airplane seats, distance to destination, and even cost weighting factors associated with one airport vs another.

2-14

a. Number of students: Yes. This characteristic of the college relates to the quantity of services provided and many costs would increase or decrease with more or fewer students.

b. Number of disciplines offered for study: No, although the distinction is subtle. While it is true that the greater the diversity in a college's course offerings, the greater will be the costs incurred, this is not an "activity" that occurs in regular operations. It is a design choice that, once made, results in a one-time change in cost level.

c. Urban versus rural location: No. While a college's location will affect many costs (housing, support labor costs, transportation, etc.) it is a one-time choice that is not an activity that varies.

2-15 Examples of direct costs of the food and beverage department in a hotel include the money spent on the food and beverages served, the wages of table service personnel, and the costs of entertainment in the dining room and lounge. Examples of indirect costs of the food and beverage department include allocations of the costs of advertising for the entire hotel, of the costs of the grounds and maintenance department, and of the hotel general manager's salary.

2-16 Costs that are likely to be controllable by a city's airport manager include the wages of personnel hired by the airport manager, the cost of heat and light in the airport manager's administrative offices, and the cost of some materials consumed in the process of operating the airport, such as cleaning, painting, and maintenance materials. Costs that are likely to be uncontrollable by the city's airport manager include depreciation of the airport facilities, fees paid by the airport to the federal government for air traffic control services, and insurance for the airport employees and patrons.

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2-17 a. Uncontrollable cost – chief of nursing has no control over pharmaceutical costs and generally does not determine the drugs or dosages prescribed.

b. Controllable cost – chief of nursing would be responsible for scheduling, and s/he controls, and is accountable for, the level of care that goes into schedule preparation.

c. Uncontrollable cost – chief of nursing does not control the choice of depreciation method nor is s/he likely to be the primary decision maker when a bed is purchased.

2-18 Out-of-pocket costs are paid in cash at or near the time they are incurred. An opportunity cost is the potential benefit given up when the choice of one action precludes the selection of a different action.

2-19 A sunk cost is a cost that was incurred in the past and cannot be altered by any current or future decision. A differential cost is the difference in a cost item under two decision alternatives.

2-20 A marginal cost is the extra cost incurred in producing one additional unit of output. The average cost is the total cost of producing a particular quantity of product or service, divided by the number of units of product or service produced.

2-21 The process of registering for classes varies widely among colleges and universities, and the responses to this question will vary as well. Examples of information that might be useful include the credit requirements and course requirements to obtain a particular degree, and a list of the prerequisites for each of the elective courses in a particular major. Such information could help the student plan an academic program over several semesters or quarters. An example of information that might create information overload is a comprehensive listing of every course offered by the college in the past five years.

2-22 The purchase cost of the old bar code scanners is a sunk cost, since it occurred in the past and cannot be changed by any future course of action. The manager is exhibiting a common behavioral tendency to pay too much attention to sunk costs.

2-23 a. Direct cost

b. Direct cost

c. Indirect cost

d. Indirect cost

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SOLUTIONS TO EXERCISES

EXERCISE 2-24 (10 MINUTES)

The general formula for solving all three cases is as follows:

Beginning inventory of finished goods	+	Cost of goods manufactured during period	–	Ending inventory of finished goods	=	Cost-of-goods sold expense

Using this formula, we can find the missing amounts as follows:

	Case		
	I	II	III
Beginning inventory of finished goods	$ 84,000*	$12,000	7,000
Add: Cost of goods manufactured	419,000	95,000	318,000*
Subtract: Ending inventory of finished goods	98,000	8,000	21,000
Cost of goods sold	$405,000	$99,000*	$304,000

*Amount missing in exercise.

EXERCISE 2-25 (10 MINUTES)

1.	Hours worked	40
	Wage rate	× $ 18
	Total compensation	$720
2.	Classification:	
	Direct labor (36 hours × $18)	$648
	Overhead (idle time: 4 hours × $18)	72
	Total compensation	$720

EXERCISE 2-26 (10 MINUTES)

1.	Regular wages (40 hours × $16)	$ 640
	Overtime wages (5 hours × $24)	120
	Total compensation	$ 760
2.	Overtime hours	5 hrs.
	Overtime premium per hour ($24 – $16)	× $ 8
	Total overtime premium	$ 40

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EXERCISE 2-26 (CONTINUED)

3. Classification:

Direct labor (45 hours × $16)	$ 720
Overhead (overtime premium: 5 hours × $8)	40
Total compensation	$ 760

EXERCISE 2-27 (30 MINUTES)

Mass customization is a production process that allows set modifications to a standardized product in order to better match the product to customer needs. As a production process, it combines the standardization of mass production with a limited form of the customization of a job shop.

The technique seems well suited to Falcon Northwest's computer-manufacturing operation for high-end gaming computers because of the company's direct-selling approach, in which most customers order customized computer systems on-line. This allows Falcon to order limited quantities of the components necessary to assemble the customized computer systems that have been ordered, and delivery is made in a relatively short period of time.

Under this approach, raw-materials and finished-goods inventory levels would be lower. Manufacturing overhead costs would likely be somewhat higher in order to support the process of specifying, ordering, receiving, and transporting smaller lots of production components. Direct materials costs should be comparable to other manufacturing techniques, as long as care is taken to negotiate supply contracts that cover the needs of a long period of time (so that renegotiations do not have to take place frequently for small quantities for components), but with slightly higher delivery costs because requirements are spread over more deliveries. Direct labor cost would likely be higher because the customization work would be less routinized.

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EXERCISE 2-28 (20 MINUTES)

1. **Tire costs: Product cost, variable, direct material**
2. **Sales commissions: Period cost, variable**
3. **Wood glue: Product cost, variable, manufacturing overhead (indirect material)**
4. **Hourly wages of security guards: Product cost, fixed (defined with respect to amount of product produced), manufacturing overhead**
5. **Salary of financial vice-president: Period cost, fixed**
6. **Advertising costs: Period cost, fixed**
7. **Straight-line depreciation: Product cost, fixed, manufacturing overhead**
8. **Wages of assembly-line personnel: Product cost, variable, direct labor**
9. **Delivery costs on customer shipments: Period cost, variable**
10. **Newsprint consumed: Product cost, variable, direct material**
11. **Plant insurance: Product cost, fixed, manufacturing overhead**
12. **LED costs: Product cost, variable, direct material**

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EXERCISE 2-29 (25 MINUTES)

1.

ALEXANDRIA ALUMINUM COMPANY
SCHEDULE OF COST OF GOODS MANUFACTURED
FOR THE YEAR ENDED DECEMBER 31, 20X1

Direct material:		
Raw-material inventory, January 1	$ 60,000	
Add: Purchases of raw material	250,000	
Raw material available for use	$310,000	
Deduct: Raw-material inventory, December 31	70,000	
Raw material used		$240,000
Direct labor		400,000
Manufacturing overhead:		
Indirect material	$ 10,000	
Indirect labor	25,000	
Depreciation on plant and equipment	100,000	
Utilities	25,000	
Other	30,000	
Total manufacturing overhead		190,000
Total manufacturing costs		$830,000
Add: Work-in-process inventory, January 1		120,000
Subtotal		$950,000
Deduct: Work-in-process inventory, December 31		115,000
Cost of goods manufactured		$835,000

2.

ALEXANDRIA ALUMINUM COMPANY
SCHEDULE OF COST OF GOODS SOLD
FOR THE YEAR ENDED DECEMBER 31, 20X1

Finished-goods inventory, January 1	$150,000
Add: Cost of goods manufactured	835,000
Cost of goods available for sale	$985,000
Deduct: Finished-goods inventory, December 31	165,000
Cost of goods sold	$820,000

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EXERCISE 2-29 (CONTINUED)

3.

ALEXANDRIA ALUMINUM COMPANY
INCOME STATEMENT
FOR THE YEAR ENDED DECEMBER 31, 20X1

Sales revenue	$1,105,000
Less: Cost of goods sold	820,000
Gross margin	$ 285,000
Selling and administrative expenses	110,000
Income before taxes	$ 175,000
Income tax expense	70,000
Net income	$ 105,000

4. In the electronic version of the solutions manual, press the CTRL key and click on the following link: Build a Spreadsheet 02-29.xls

EXERCISE 2-30 (15 MINUTES)

	Number of Muffler Replacements		
	500	600	700
Total costs:			
Fixed costs	(a) $42,000	$42,000	(b) $42,000
Variable costs	(c) 25,000	30,000	(d) 35,000
Total costs	(e) $67,000	$72,000	(f) $77,000
Cost per muffler replacement:			
Fixed cost	(g) $ 84	(h) $ 70	(i) $ 60
Variable cost	(j) 50	(k) 50	(l) 50
Total cost per muffler replacement	(m) $134	(n) $120	(o) $110

Explanatory Notes:

(a) Total fixed costs do not vary with activity.

(c) Variable cost per replacement = $30,000/600 = $50

Total variable cost for 500 replacements = $50 × 500 = $25,000

(g) Fixed cost per replacement = $42,000/500 = $84

(j) Variable cost per replacement = $25,000/500 = $50

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EXERCISE 2-31 (15 MINUTES)

1.	Phone bill, January: $100 + ($.25 × 6,000)	$1,600	
	Phone bill, February: $100 + ($.25 × 5,000)	$1,350	
2.	Cost per call, January: $1,600/6,000	$ .267	(rounded)
	Cost per call, February: $1,350/5,000	$ .27	
3.	Fixed component, January	$ 100	
	Variable component, January: $.25 × 6,000	1,500	
	Total	$1,600	

4. Since each phone call costs $.25, the marginal cost of making the 6,001st call is $.25.

5. The average cost of a phone call in January (rounded) is $.267 ($1,600/6,000).

EXERCISE 2-32 (5 MINUTES)

Martin Chuzzlewit's expenditure is a *sunk* cost. It is irrelevant to any future decision Martin may make about the land.

EXERCISE 2-33 (5 MINUTES)

Annual cost using European component: $8,900 × 10	$89,000
Annual cost using Part A200: ($5,100 + $500) × 10	56,000
Annual differential cost	$33,000

EXERCISE 2-34 (5 MINUTES)

1. The $140,000 is the *opportunity cost* associated with using the computer in the Department of Education for work in the governor's office.
2. The $140,000 leasing cost should be assigned to the governor's office. It was incurred as a result of activity in that office.

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EXERCISE 2-35 (10 MINUTES)

1. **Your decision to see the game really cost you $400, the amount forgone when you refused to sell the ticket. A convenient way to think about this is as follows: You could have sold the ticket for $400, thereby resulting in a profit on the deal of $250 ($400 sales proceeds minus $150 out-of-pocket purchase cost). Instead, you went to the game, which left you relieved of your $150 out-of-pocket cost. The difference between the $150 *reduction* in your wealth and the $250 *profit* you could have had is $400. Thus, $400 is the true cost of going to the game.**
2. **The $400 is an *opportunity cost.* At the time you made the decision to attend the game, the $150 you actually had paid for the ticket is a *sunk cost.* It is not relevant to any future decision.**

EXERCISE 2-36 (15 MINUTES)

1. **The marginal cost would include any food and beverages consumed by the passenger and the (almost imperceptible) increase in fuel costs.**
2. **In most cases, only the cost of the food and beverage consumed by the customer would be a marginal cost. It is unlikely that the restaurant would need to employ additional service personnel, dishwashers, and so on.**
3. **For certain, the marginal cost of an extra flight would include the aircraft fuel, wages of the flight crew, and the food and beverages consumed by the passengers and crew. There might also be additional costs for ground, maintenance and baggage personnel, but it would depend on whether those services are contracted on a per-flight basis or the airline hires employees for those purposes at the airport (and those employees have excess capacity). Both models are used.**
4. **The marginal cost would include the additional wages or commissions earned by the branch bank employees and the additional electricity used for light, heat, and computer equipment.**
5. **The marginal cost of the snowboard would include the direct material. It is unlikely that labor and other costs would change with the addition of only one more product unit.**

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SOLUTIONS TO PROBLEMS

PROBLEM 2-37 (20 MINUTES)

1. 1. Income statement
   2. Balance sheet
   3. Income statement
   4. Income statement
   5. Cost-of-goods-manufactured schedule
   6. Income statement
   7. Cost-of-goods-manufactured schedule
   8. Cost of-goods-manufactured schedule
   9. Balance sheet, cost-of-goods-manufactured schedule
   10. Income statement
   11. Income statement

2. The asset that differs among these businesses is inventory. Service businesses typically carry no (or very little) inventory. Retailers and wholesalers normally stock considerable inventory. Manufacturers also carry significant inventories, typically subdivided into three categories: raw material, work in process, and finished goods.

3. The income statements of service business normally have separate sections for operating revenues, operating expenses, and other income (expenses). In contrast, those of retailers, wholesalers, and manufacturers disclose sales revenue, followed immediately by cost of goods sold and gross margin. Operating expenses are listed next followed by other income (expenses).

PROBLEM 2-38 (30 MINUTES)

1. Manufacturing overhead:

Indirect labor…….	$109,000
Building depreciation ($80,000 x 75%)..	60,000
Other factory costs……..	344,000
Total……...	$513,000

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PROBLEM 2-38 (CONTINUED)

2. Cost of goods manufactured:

Direct material:		
Raw-material inventory, Jan. 1	$ 15,800	
Add: Purchases of raw material	175,000	
Raw material available for use	$190,800	
Deduct: Raw-material inventory, Dec. 31	18,200	
Raw material used		$172,600
Direct labor		254,000
Manufacturing overhead		513,000
Total manufacturing costs		$939,600
Add: Work-in-process inventory, Jan. 1		35,700
Subtotal		$975,300
Deduct: Work-in-process inventory, Dec. 31		62,100
Cost of goods manufactured		$913,200

3. Cost of goods sold:

Finished-goods inventory, Jan. 1	$ 111,100
Add: Cost of goods manufactured	913,200
Cost of goods available for sale	$1,024,300
Deduct: Finished-goods inventory, Dec. 31	97,900
Cost of goods sold	$ 926,400

4. Net income:

Sales revenue		$1,495,000
Less: Cost of goods sold		926,400
Gross margin		$ 568,600
Selling and administrative expenses:		
Salaries	$133,000	
Building depreciation ($80,000 x 25%)	20,000	
Other	195,000	348,000
Income before taxes		$ 220,600
Income tax expense ($220,600 x 30%)		66,180
Net income		$ 154,420

5. The company sold 11,500 units during the year ($1,495,000 ÷ $130). Since 160 of the units came from finished-goods inventory (1,350 – 1,190), the company would have manufactured 11,340 units (11,500 – 160).

6. In the electronic version of the solutions manual, press the CTRL key and click on the following link: Build a Spreadsheet 02-38.xls

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PROBLEM 2-39 (25 MINUTES)

Since gross margin equals 30% of sales, cost of goods sold equals 70% of sales, or $231,000 ($330,000 x 70%). Thus, the finished goods destroyed by the fire cost $44,000, computed as follows:

Finished-goods inventory, Jan. 1 (given)……..	$ 37,000
Add: Cost of goods manufactured*……	238,000
Cost of goods available for sale (given)……	$275,000
Deduct: Finished-goods inventory, Apr. 12*……	44,000
Cost of goods sold (calculated above)……..	$231,000

***Fill in these blanks, given the other numbers in this table.**

Direct material used:

Direct material averages 25% of prime costs (i.e., direct material + direct labor). Thus:

Let X = direct material used

X = (X + $120,000) x 25%

0.75X = $30,000

X = $40,000

Manufacturing overhead:

Manufacturing overhead equals 50% of total production costs.

Thus: Let Y = manufacturing overhead

Y = (direct material used + direct labor + manufacturing overhead) x 50%

Y = ($40,000 + $120,000 + Y) x 50%

0.50Y = $80,000

Y = $160,000

The work in process destroyed by the fire cost $103,000, computed as follows:

Direct material……	$ 40,000
Direct labor (given)……	120,000
Manufacturing overhead……..	160,000
Total manufacturing costs……..	$320,000
Add: Work-in-process inventory, Jan. 1 (given)…	21,000
Subtotal……..	$341,000
Deduct: Work-in-process inventory, Apr. 12*…….	103,000
Cost of goods manufactured (from above)…….	$238,000

***$103,000 = $341,000 – $238,000**

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PROBLEM 2-40 (25 MINUTES)

1. Fixed manufacturing overhead per unit:

$600,000 ÷ 24,000 units produced = $25

Average unit manufacturing cost:

Direct material……..	$ 20
Direct labor……	37
Variable manufacturing overhead..	48
Fixed manufacturing overhead……	25
Average unit cost……..	$130

Production……	24,000 units
Sales……	20,000 units
Ending finished-goods inventory…	4,000 units

Cost of December 31 finished-goods inventory:

4,000 units x $130 = $520,000

2. Net income:

Sales revenue (20,000 units x $185)……	$3,700,000
Cost of goods sold (20,000 units x $130)…..	2,600,000
Gross margin……	$1,100,000
Selling and administrative expenses……..	860,000
Income before taxes……	$ 240,000
Income tax expense ($240,000 x 30%)……	72,000
Net income……	$ 168,000

3. (a) No change. Direct labor is a variable cost, and the cost per unit will remain constant.

(b) No change. Despite the decrease in the number of units produced, this is a fixed cost, which remains the same in total.

(c) No change. Selling and administrative costs move more closely with changes in sales than with units produced. Additionally, this is a fixed cost.

(d) Increase. The average unit cost of production will change because of the per-unit fixed manufacturing overhead. A reduced production volume will be divided into the fixed dollar amount, which increases the cost per unit.

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PROBLEM 2-41 (40 MINUTES)

	Case A	Case B	Case C
Beginning inventory, raw material	$60,000*	$ 20,000	$ 15,000
Ending inventory, raw material	90,000	10,000*	30,000
Purchases of raw material	100,000	85,000	70,000*
Direct material used	70,000	95,000	55,000*
Direct labor	200,000*	100,000	125,000
Manufacturing overhead	250,000	150,000*	160,000
Total manufacturing costs	520,000	345,000	340,000
Beginning inventory, work in process	35,000	20,000	15,000*
Ending inventory, work in process	30,000*	35,000	5,000
Cost of goods manufactured	525,000	330,000*	350,000
Beginning inventory, finished goods	50,000	40,000	20,000*
Cost of goods available for sale	575,000*	370,000*	370,000
Ending inventory, finished goods	30,000*	40,000*	25,000
Cost of goods sold	545,000	330,000	345,000*
Sales	800,000*	500,000*	480,000
Gross margin	255,000	170,000	135,000*
Selling and administrative expenses	105,000*	75,000	45,000*
Income before taxes	150,000	95,000*	90,000
Income tax expense	40,000	45,000	35,000*
Net income	110,000*	50,000*	55,000

*Amount missing in problem.

PROBLEM 2-42 (25 MINUTES)

1. a. Total prime costs:

Direct material	$ 2,100,000
Direct labor:	
Wages	485,000
Fringe benefits	95,000
Total prime costs	$ 2,680,000

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PROBLEM 2-42 (CONTINUED)

b. Total manufacturing overhead:

Depreciation on factory building	$ 115,000
Indirect labor: wages	140,000
Production supervisor's salary	45,000
Service department costs	100,000
Indirect labor: fringe benefits	30,000
Fringe benefits for production supervisor	9,000
Total overtime premiums paid	55,000
Cost of idle time: production employees	40,000
Total manufacturing overhead	$ 534,000

c. Total conversion costs:

Direct labor ($485,000 + $95,000)	$ 580,000
Manufacturing overhead	534,000
Total conversion costs	$1,114,000

d. Total product costs:

Direct material	$2,100,000
Direct labor	580,000
Manufacturing overhead	534,000
Total product costs	$3,214,000

e. Total period costs:

Advertising expense	$ 99,000
Administrative costs	150,000
Rental of office space for sales personnel	15,000
Sales commissions	5,000
Product promotion costs	10,000
Total period costs	$ 279,000

2. The $15,000 in rental cost for sales office space rental is an opportunity cost. It measures the opportunity cost of using the former sales office space for raw-material storage.

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PROBLEM 2-43 (35 MINUTES)

1.

SAN FERNANDO FASHIONS COMPANY
SCHEDULE OF COST OF GOODS MANUFACTURED
FOR THE YEAR ENDED DECEMBER 31, 20X2

Direct material:		
Raw-material inventory, January 1	$ 40,000	
Add: Purchases of raw material	180,000	
Raw material available for use	$220,000	
Deduct: Raw-material inventory, December 31	25,000	
Raw material used		$195,000
Direct labor		200,000
Manufacturing overhead:		
Indirect material	$ 10,000	
Indirect labor	15,000	
Utilities: plant	40,000	
Depreciation: plant and equipment	60,000	
Other	80,000	
Total manufacturing overhead		205,000
Total manufacturing costs		$600,000
Add: Work-in-process inventory, January 1		40,000
Subtotal		$640,000
Deduct: Work-in-process inventory, December 31		30,000
Cost of goods manufactured		$610,000

2.

SAN FERNANDO FASHIONS COMPANY
SCHEDULE OF COST OF GOODS SOLD
FOR THE YEAR ENDED DECEMBER 31, 20X2

Finished goods inventory, January 1	$ 20,000
Add: Cost of goods manufactured	610,000
Cost of goods available for sale	$630,000
Deduct: Finished-goods inventory, December 31	50,000
Cost of goods sold	$580,000

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PROBLEM 2-43 (CONTINUED)

3.

SAN FERNANDO FASHIONS COMPANY
INCOME STATEMENT
FOR THE YEAR ENDED DECEMBER 31, 20X2

Sales revenue	$950,000
Less: Cost of goods sold	580,000
Gross margin	$370,000
Selling and administrative expenses	150,000
Income before taxes	$220,000
Income tax expense	90,000
Net income	$130,000

4. In the electronic version of the solutions manual, press the CTRL key and click on the following link: Build a Spreadsheet 02-43.xls

PROBLEM 2-44 (15 MINUTES)

1.	Regular hours: 40 × $12	$480
	Overtime hours: 8 × $18	144
	Total cost of wages	$624
2.	a. Direct labor: 38 × $12	$456
	b. Manufacturing overhead (idle time): 1 × $12	12
	c. Manufacturing overhead (overtime premium): 8 × ($18 – $12)	48
	d. Manufacturing overhead (indirect labor): 9 × $12	108
	Total cost of wages	$624

PROBLEM 2-45 (20 MINUTES)

1. a, d, g, i
2. a, d, g, j
3. b, c, f
4. b, d, g, k
5. a, d, g, k

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PROBLEM 2-45 (CONTINUED)

6. a, d, g, j
7. b, c, f
8. b, d, g, k
9. b, c and d*, e and f and g*, k*

   *The building is used for several purposes.
10. b, c, f
11. b, c, h
12. b, c, f
13. b, c, e
14. b, c and d=, e and f and g=, k=

    =The building that the furnace heats is used for several purposes.
15. b, d, g, k

PROBLEM 2-46 (20 MINUTES)

1. 3 hours × ($12 + $3) = $45

   Notice that the overtime premium on the flight is not a direct cost of the flight.
2. 3 hours × ($12 × .5) = $18

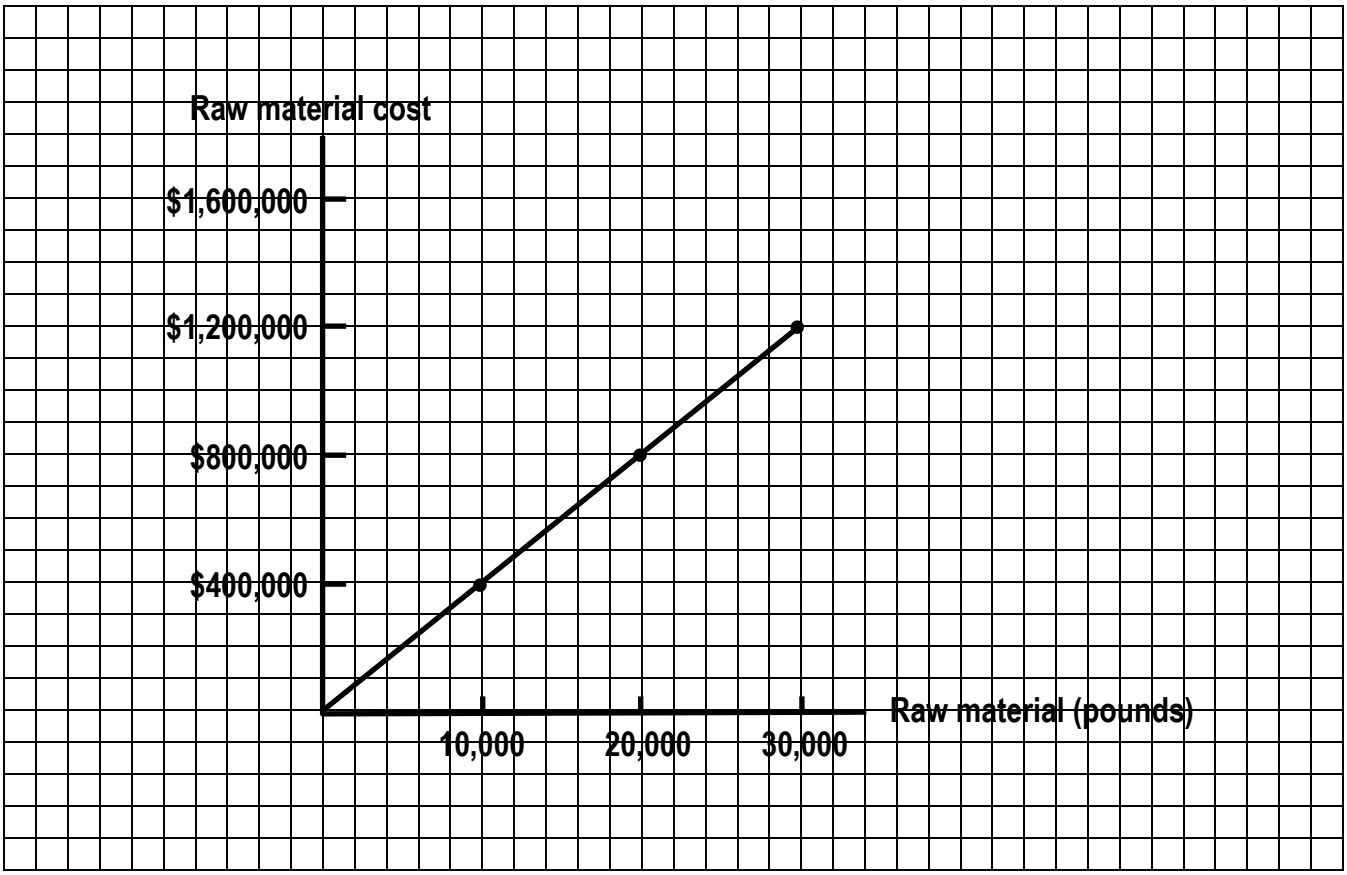
   This is the overtime premium, which is part of Gaines' overall compensation.
3. The overtime premium should be included in overhead and allocated across all of the company's flights.
4. The $82 is an opportunity cost of using Gaines on the flight departing from Topeka on August 11. The cost should be assigned to the August 11 flight departing from Topeka.

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PROBLEM 2-47 (15 MINUTES)

1. Graph of raw-material cost:



2.

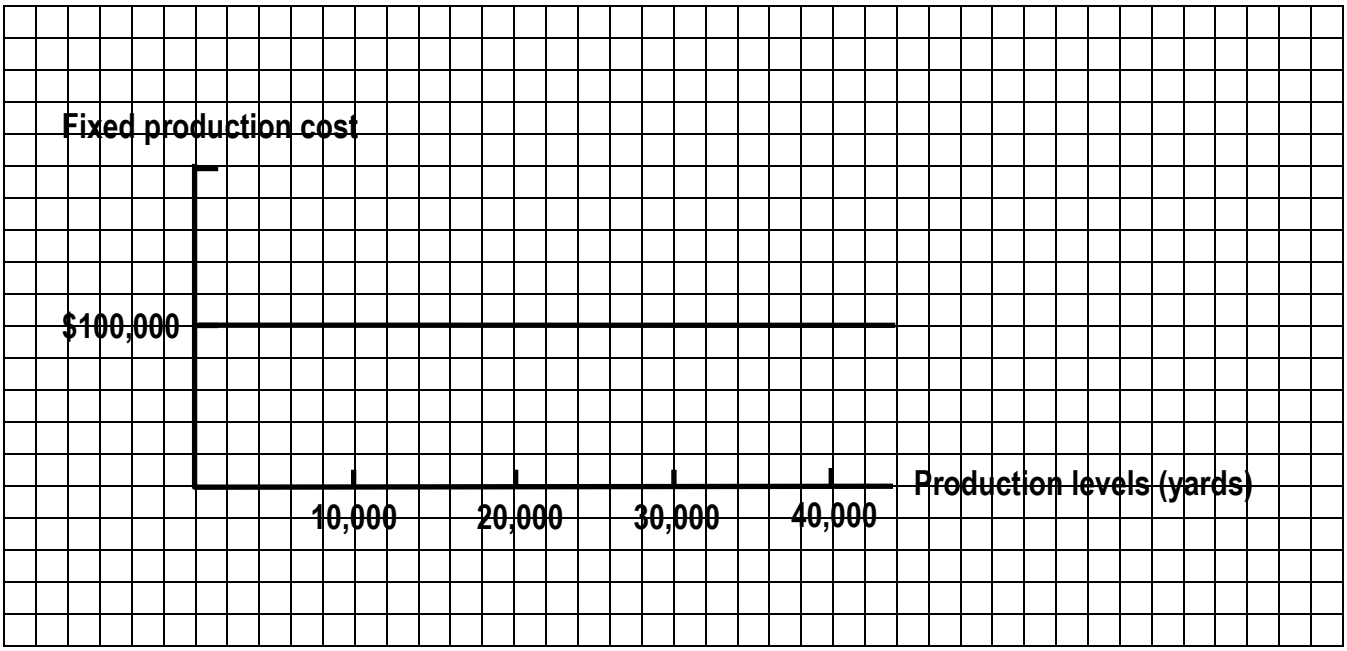
Production Level in Pounds	Unit Cost	Total Cost
1	$40 per pound	$40
10	$40 per pound	$400
1,000	$40 per pound	$40,000

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PROBLEM 2-48 (25 MINUTES)

1. Graph of fixed production cost:



2.

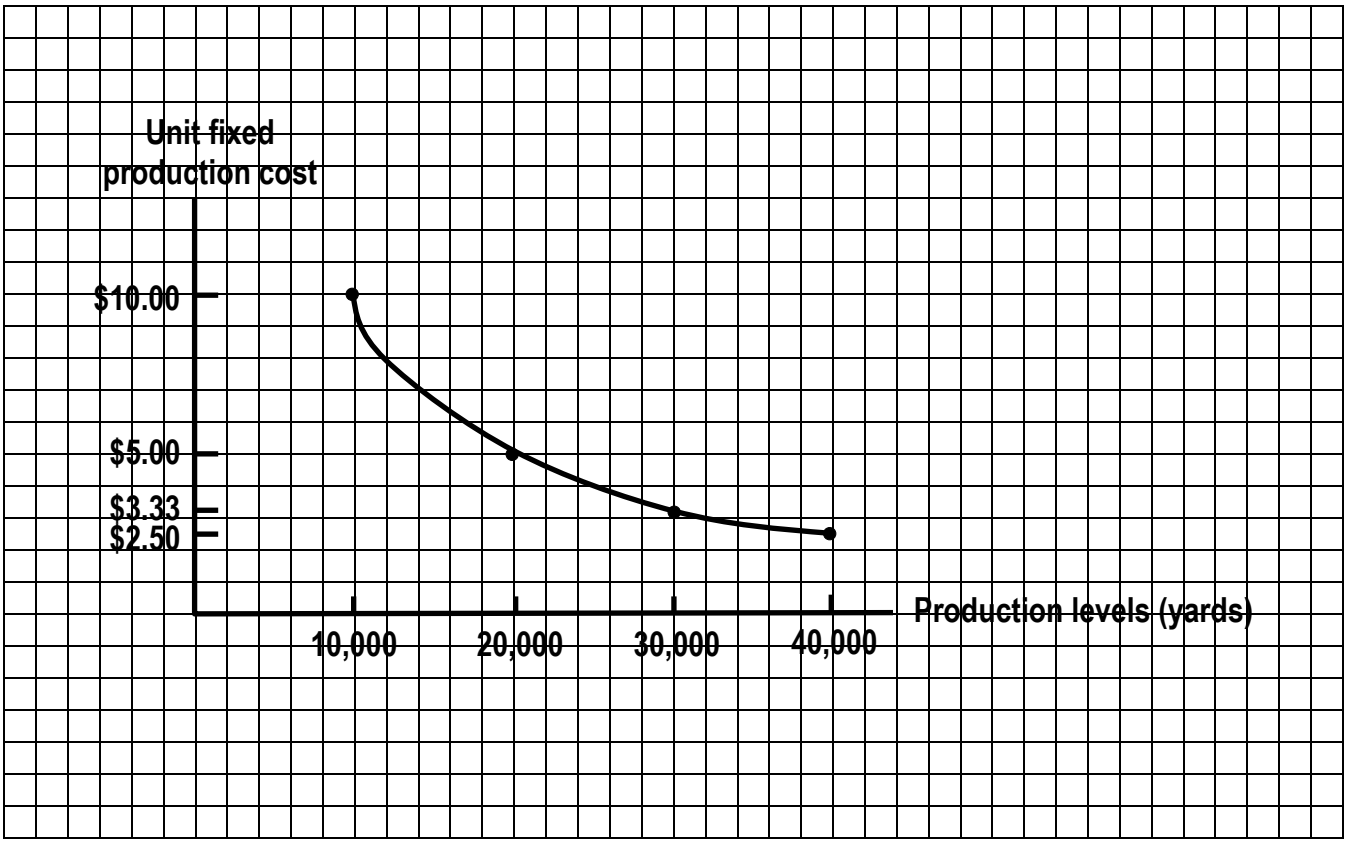
Production Level in Yards	Unit Fixed Cost	Total Fixed Cost
1	$100,000 per yard	$100,000
10	$10,000 per yard	$100,000
10,000	$10 per yard	$100,000
40,000	$2.50 per yard	$100,000

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PROBLEM 2-48 (CONTINUED)

3. Graph of unit fixed production cost:



PROBLEM 2-49 (10 MINUTES)

Cost Item Number	Direct or Indirect	Partially Controllable by Department Supervisor
1.	indirect	no
2.	indirect	no
3.	direct	yes
4.	direct	no
5.	direct	yes

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PROBLEM 2-50 (10 MINUTES)

Cost Item Number	Product Cost or Period Cost
1.	period*
2.	product
3.	product
4.	product
5.	product
6.	period*
7.	product
8.	period*
9.	product

*Service industry firms typically treat all costs as operating expenses which are period expenses. Such firms do not inventory costs because they usually have nothing of significance in inventory.

PROBLEM 2-51 (15 MINUTES)

	Variable or Fixed	20x2 Forecast	Explanation
Direct material	V	$3,600,000	$3,000,000 × 1.20
Direct labor	V	2,640,000	$2,200,000 × 1.20
Manufacturing overhead			
Utilities (primarily electricity)	V	168,000	$140,000 × 1.20
Depreciation on plant and equipment	F	230,000	same
Insurance	F	160,000	same
Supervisory salaries	F	300,000	same
Property taxes	F	210,000	same
Selling costs			
Advertising	F	195,000	same
Sales commissions	V	108,000	$90,000 × 1.20
Administrative costs			
Salaries of top management and staff	F	372,000	same
Office supplies	F	40,000	same
Depreciation on building and equipment	F	80,000	same

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PROBLEM 2-52 (15 MINUTES)

1. f, average cost
2. e, marginal cost
3. c, sunk cost
4. a, opportunity cost
5. d, differential cost
6. b, out-of-pocket cost
7. e, marginal cost

PROBLEM 2-53 (20 MINUTES)

1. b, d, e, k
2. a, c, e, k
3. h
4. a, d, e, j
5. d, e, i
6. i
7. d, e, i
8. a, d, e, k
9. a, d, e, k
10. j
11. g (The $300 cost savings is a differential cost.)
12. a, c, e
13. d, e, k
14. e, k
15. b, d, e, k

PROBLEM 2-54 (40 MINUTES)

1. Procter & Gamble is a manufacturing firm. Its income statement highlights the firm's cost-of-goods-sold expense, which is the cost of all of the products sold during the

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year. Cost of goods sold is subtracted from net sales to arrive at the gross profit. The company's other operating expenses then are subtracted from the gross profit.

Walmart Inc. is a retail firm. Its income statement also shows the firm's cost of sales, which is another name for cost of goods sold. The cost of sales includes all of the costs of acquiring merchandise for resale. The company's other operating expenses are identified separately from cost of sales.

Southwest Airlines Company is an airline, which is a service industry firm. The company does not sell an inventoriable product, but rather provides air transportation service. Therefore, the company's income statement does not list any cost-of-goods-sold expense. All of its expenses are operating expenses.

2. **Cost-accounting data are used to measure all of the costs on all three companies' income statements. For example, the cost-accounting system at Procter & Gamble measures the cost of direct labor, direct material, and manufacturing overhead incurred in the manufacturing process. Walmart's cost-accounting system measures the cost of acquiring merchandise for resale. Southwest Airlines' cost-accounting system measures the cost of aviation fuel consumed.**

3. **The ticket agents' salaries would be included in salaries, wages, and benefits. Depreciation of the airline's computer equipment would be included in depreciation.**

4. **Walmart's cost of newspaper advertising would be included in selling expenses. The cost of merchandise sold would be included in cost of sales (same as cost of goods sold).**

5. **The salary for a Procter & Gamble brand manager would be included in selling expenses. Production employees' salaries are product costs, so they are part of the cost of goods sold. Similarly, raw-material costs are product costs, and they are included in cost of goods sold.**

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PROBLEM 2-55 (10 MINUTES)

1.	$400	($850 – $450)
2.	$330	($1,540 – $1,210)
3.	$310	($1,850 – $1,540)
4.	$425	($850/2)
5.	$385	($1,540/4)
6.	$370	($1,850/5)

PROBLEM 2-56 (25 MINUTES)

1. b, c, h, j, m
2. a, c, i, j, l
3. b, d, i, j, m
4. a, c, i, j, l
5. a, c, i, j, l
6. e
7. a, c, i, j, l
8. a, c, f, i, j, l
9. b, d, k, m
10. a, c, i, j, m
11. b, c, i, j, l
12. a, c, i, j, l
13. b, c, g, j, l
14. b, c, i, j, l
15. b, c, i, j, l

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PROBLEM 2-57 (25 MINUTES)

1.

Output (.75 liter bottles)	Calculation	Unit Cost
10,000	$177,000/10,000	$17.70
15,000	$195,500/15,000	$13.03 (rounded)
20,000	$214,000/20,000	$10.70

The unit cost is minimized at a sales volume of 20,000 bottles.

2.

Output (.75 liter bottles)	Sales Revenue	Total Costs	Profit
10,000	$180,000	$177,000	$ 3,000
15,000	225,000	195,500	29,500
20,000	240,000	214,000	26,000

Profit is maximized at a production level of 15,000 bottles of wine.

3. The 15,000-bottle level is best for the company, since it maximizes profit.

4. The unit cost decreases as output increases, because the fixed cost per unit declines as production and sales increase.

   A lower price is required to motivate consumers to purchase a larger amount of wine.

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PROBLEM 2-58 (15 MINUTES)

1. If the company buys 30,000 units of Part MR24, at a price of $\$X$ per unit, its total cost will be:

$$(30{,}000 \times \$X) + \$60{,}000$$

If the company manufactures the parts, its total cost will be:

$$(30{,}000 \times \$11) + \$150{,}000$$

By equating these two expressions for total cost, we can solve for the price, X, at which the total cost is the same under the two alternatives:

$$30{,}000X + \$60{,}000 = (30{,}000)(\$11) + \$150{,}000 \qquad 30{,}000X + \$60{,}000 = (30{,}000)(\$11) + \$150{,}000$$

$$30{,}000X = \$420{,}000 \qquad 30{,}000X = \$420{,}000$$

$$X = \$14 \qquad X = \$14$$

Thus the firm will realize a net benefit by purchasing Part MR24 if the outside supplier charges a price less than $14.

2. If the firm buys Y units of Part MR24 at a price of $12.875 per unit, the total cost will be:

$$(\$12.875 \times Y) + \$60{,}000 \quad (\$12.875 \times Y) + \$60{,}000$$

If the company manufactures Y units of Part MR24, the total cost will be:

$$(\$11 \times Y) + \$150{,}000 \quad (\$11 \times Y) + \$150{,}000$$

If we equate these expressions, we can solve for the number of parts, Y, at which the firm will be indifferent between making and buying Part MR24.

$$\$12.875Y + \$60{,}000 = \$11Y + \$150{,}000$$

$$\$1.875Y = \$90{,}000$$

$$Y = \$48{,}000$$

Thus, the company will be indifferent between the two alternatives if it requires 48,000 units of Part MR24 each month.

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SOLUTIONS TO CASES

CASE 2-59 (30 MINUTES)

1. **MEMORANDUM**

Date: Today

To: James Cassanitti

From: I. M. Student

Subject: Costs related to Printer Case Department

The $29,500 building rental cost allocated to the Printer Case Department is part of larger rental costs for the entire building. Even if the Printer Case Department is closed down, CompTech still will occupy the entire building. Therefore, the entire rental cost, including the $29,500 portion allocated to the Printer Case Department, will be incurred whether or not the department closes.

The real cost of the space occupied by the Printer Case Department is the $39,000 the company is paying to rent warehouse space. This cost would be avoided if the Printer Case Department were closed, since the storage operation could be moved into the company's main building. The $39,000 rental cost is the *opportunity cost* of using space in the main building for the Printer Case Department.

The supervisor of the Printer Case Department will be retained by the company regardless of the decision about the Printer Case Department. However, if the Printer Case Department is kept in operation the company will have to hire a new supervisor for the Assembly Department. The salary of that new supervisor is a relevant cost of continuing to operate the Printer Case Department.

Another way of looking at the situation is to realize that with the Printer Case Department in operation, the company will need two supervisors: the current Printer Case Department supervisor and a new supervisor for the Assembly Department. Alternatively, if the Printer Case Department is closed, only the current Printer Case Department supervisor will be needed. He or she will move to the Assembly Department. The difference, then, between the two alternatives is the cost of compensation for the new Assembly Department supervisor if the Printer Case Department is not closed.

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CASE 2-59 (CONTINUED)

2. The controller has an ethical obligation to state accurately the projected cost savings from closing the Printer Case Department. The production manager and other decision makers have a right to know the financial implications of closing the department. Several of the ethical standards for management accountants (listed in Chapter 1) apply, including the following:

Competence:

- **Maintain an appropriate level of professional expertise by continually developing knowledge and skills.**
- **Perform professional duties in accordance with relevant laws, regulations, and technical standards.**
- **Provide decision support information and recommendations that are accurate, clear, concise, and timely.**
- **Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.**

Credibility:

- **Communicate information fairly and objectively.**
- **Disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.**
- **Disclose delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.**

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CASE 2-60 (50 MINUTES)

1. a. FastQ Company would be indifferent to acquiring either the small-volume copier, 1024S, or the medium-volume copier, 1024M, at the point where the costs for 1024S and 1024M are equal. This point may be calculated using the following formula, where X equals the number of copies:

$$(\text{Variable cost}_S \times X_S) + \text{fixed cost}_S = (\text{variable cost}_M \times X_M) + \text{fixed cost}_M$$

1024S		1024M
$.14$X$ + $8,000	=	$.09$X$ + $11,000
$.05$X$	=	$3,000
X	=	60,000 copies

The conclusion is that FastQ Company would be indifferent to acquiring either the 1024S or 1024M machine at an annual volume of 60,000 copies.

b. A decision rule for selecting the most profitable copier, when the volume can be estimated, would establish the points where FastQ Company is indifferent to each machine. The volume where the costs are equal between alternatives can be calculated using the following formula, where X equals the number of copies:

$$(\text{Variable cost}_S \times X_S) + \text{fixed cost}_S = (\text{variable cost}_M \times X_M) + \text{fixed cost}_M$$

For the 1024S machine compared to the 1024M machine:

1024S		1024M
$.14$X$ + $8,000	=	$.09$X$ + $11,000
$.05$X$	=	$3,000
X	=	60,000 copies

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CASE 2-60 (CONTINUED)

For the 1024M machine compared to the 1024G machine:

1024M		1024G
$\$.09X + \$11{,}000$	=	$\$.05X + \$20{,}000$
$\$.04X$	=	$\$9{,}000$
X	=	225,000 copies

The decision rule is to select the alternative as shown in the following chart.

Anticipated Annual Volume	Optimal Model Choice
0–60,000	1024S
60,000–225,000	1024M
225,000 and higher	1024G

2. a. **The previous purchase price of the endor on hand, $5.00 per gallon, and the average cost of the endor inventory, $4.75 per gallon, are sunk costs. These costs were incurred in the past and will have no impact on future costs. They cannot be changed by any future action and are irrelevant to any future decision. Although the current price of endor is $5.50 per gallon, no endor will be purchased at this price. Thus, it too is irrelevant to the current special order. If the order is accepted, the required 800 gallons of endor will be replaced at a cost of $5.75 per gallon. Therefore, the real cost of endor for the special order is $4,600 (800 × $5.75).**

b. **The $20,000 paid by Alderon for its stock of tatooine is a sunk cost. It was incurred in the past and is irrelevant to any future decision. The current market price of $11 per kilogram is irrelevant, since no more tatooine will be purchased. If the special order is accepted, Alderon will use 1,500 kilograms of its tatooine stock, thereby losing the opportunity to sell its entire 2,000-kilogram stock for $14,000. Thus, the $14,000 is an opportunity cost of using the tatooine in production instead of selling it to Solo Industries. Moreover, if Alderon uses 1,500 kilograms of tatooine in production, it will have to pay $1,000 for its remaining 500 kilograms to be disposed of at a hazardous waste facility. This $1,000 disposal cost is an out-of-pocket cost.**

The real cost of using the tatooine in the special order is $15,000 ($14,000 opportunity cost + $1,000 out-of-pocket cost).

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CASE 2-60 (CONTINUED)

3. The projected donations from the wildlife show amount to $100,000 (10 percent of the TV audience at $10,000 per 1 percent of the viewership). The projected donations from the robotic manufacturing series amount to $75,000 (15 percent of the TV audience at $5,000 per 1 percent of the viewership). Therefore, the differential revenue is $25,000, with the advantage going to the wildlife show. However, if the robotic manufacturing show is aired, the station will be able to sell the wildlife show to network TV. Therefore, airing the wildlife show will result in the incurrence of a $25,000 opportunity cost.

The conclusion, then, is that the station's management should be indifferent between the two shows, since each would generate revenue of $100,000.

Wildlife show (10 × $10,000)	**$100,000**	**donation**
Robotic manufacturing show (15 × $5,000)	**$ 75,000**	**donation**
Robotic manufacturing show (sell wildlife show)	**25,000**	**sales proceeds**
	$100,000	**total revenue**

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CHAPTER 1

THE CRUCIAL ROLE OF MANAGERIAL ACCOUNTING IN A DYNAMIC BUSINESS ENVIRONMENT

Learning Objectives

1-1. Define managerial accounting and describe its role in the management process.

1-2. Explain four fundamental management processes that help organizations attain their goals.

1-3. List and describe five objectives of managerial accounting activity.

1-4. Explain the major differences between managerial and financial accounting.

1-5. Describe the accounting and finance structure in an organization.

1-6. Describe the roles of an organization's chief financial officer (CFO) or controller, treasurer, and internal auditor.

1-7. Understand and explain the value chain concept.

1-8. Explain how investments in capacity affect managerial decision making.

1-9. Understand and explain big data and data analytics and how they interact with managerial accounting.

1-10. Discuss the professional organizations and certifications in the field of managerial accounting.

1-11. Describe the ethical responsibilities and ethical standards that apply to managerial accounting.

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Chapter Overview

I. Managerial Accounting: A Business Partnership with Management
   A. What is managerial accounting?
II. Managing Resources, Activities, and People
   A. Management activities
      1. Decision making
      2. Planning
      3. Directing operational activities
      4. Controlling
III. How Managerial Accounting Adds Value to the Organization
   A. Objectives of managerial accounting activity
      1. Providing information for decision making and planning
      2. Assisting managers in directing and controlling operational activities
      3. Motivating managers and other employees toward the organization's goals
      4. Measuring the performance of activities, subunits, managers, and other employees within the organization
      5. Assessing the organization's competitive position, and working with other managers to ensure the organization's long-run competitiveness in its industry
   B. Balanced Scorecard
      1. Financial Perspective
      2. Customer Perspective
      3. Internal Business Process Perspective
      4. Learning and Growth Perspective
IV. Managerial Accounting in Different Types of Organizations
      1. Profit-seeking or nonprofit enterprises need information
      2. Managerial accounting information is vital in all types of organizations
      3. The five basic purposes of managerial accounting activity are relevant in each of these organizations
V. Managerial versus Financial Accounting
      1. Focus of reports
      2. External vs. internal users of information
      3. Degree of regulation
      4. Information focus
VI. Where Do We Find Managerial Accountants in an Organization?
   A. Organization Chart
      1. Line and staff positions
      2. CFO or controller
      3. Treasurer
      4. Internal auditor
   B. Cross-Functional Deployment

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VII. The Operational Context of Managerial Accounting
  A. Managerial Accounting and the Value Chain
  B. Capacity and Capacity Costs
  C. Big Data, Data Analytics, and Managerial Accounting
VIII. Managerial Accounting as a Career
  A. Professional Organizations
  B. Professional Certification
IX. Managerial Accounting and the Ethical Climate of Business
  A. Sarbanes-Oxley
  B. PCAOB
  C. IMA

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Key Lecture Concepts

I. Managerial Accounting: A Business Partnership with Management

- Types of organizations include manufacturers, retailers, service providers, agribusinesses, and nonprofit firms. These organizations have goals such as growth, profit, quality, leadership, etc.

- Organizations have information needs in the financial, production, personnel, environmental, and legal areas. Managerial accounting provides some of this information. **Managerial accounting** is the process of identifying, measuring, analyzing, interpreting, and communicating information in pursuit of an organization's goals.

- The role of managerial accountants has expanded in recent years. **Managerial accountants** are specialists in using the tools of managerial accounting to help the organization and its managers run the operation smoothly. Formerly in staff positions, managerial accountants now serve as internal business consultants, trusted advisors, and "business partners."

II. Managing Resources, Activities, and People

- Management functions performed within an organization can often be summarized as decision making, planning, the directing of operational activities, and controlling.

  - **Decision making—**the process of choosing among available alternatives

  - **Planning—**developing a detailed financial and operational description of anticipated operations

  - **Directing operational activities—**running the organization on a day-to-day basis

  - **Controlling—**ensuring that the organization operates in the intended manner to achieve its goals

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III. How Managerial Accounting Adds Value to the Organization

Managerial accounting:

- Provides managers with information (e.g., product costs, budgets, cash flows). The information includes financial and nonfinancial data to help managers with strategic planning and decision making.
- Assists in directing and controlling (analyzing and comparing actual performance to budgeted plans; **attention-directing** to highlight successful or problem areas).
- Motivates managers to achieve the organization's goals by communicating the plans, providing a measurement of how well the plans were achieved, and prompting an explanation of deviations from plans.
- Measures performance not only for the entire organization, as in financial accounting, but also for many subunits (divisions, departments, managers).
- Assesses the organization's competitive position in the rapidly changing business environment. Looks at how well the firm is doing internally, in the eyes of its customers, from the standpoint of innovation and continuous improvement, and financially.
    - The preceding factors are integrated in a model of performance evaluation known as the **balanced scorecard.**

IV. Managerial Accounting in Different Types of Organizations.

- Profit-seeking or nonprofit enterprises need information.
- Managerial accounting information is vital in all types of organizations. Some organizations that have managerial accountants include:
    - Ford (manufacturing)
    - J.Crew (retail)
    - GoDaddy.com (Internet)
    - American Airlines (transportation)

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- Marriott Hotels (tourism)
- Goldman Sachs (financial services)
- The Universityof Texas (education)
- The American Red Cross (nonprofit)
- M. D. Anderson Cancer Center (health care)
- U.S. Department of Defense (government)

- The five basic purposes of managerial accounting activity are relevant in each of these organizations.

V. Managerial versus Financial Accounting

- **Financial accounting** is intended for external users (investors, creditors, etc.); is heavily regulated by the FASB, SEC; is mandatory for publicly-traded companies; is historic in nature.

- **Managerial accounting** is intended for internal users (managers); is not heavily regulated; is not mandatory but rather is adopted based on costs/benefits; is future-oriented.

VI. Where Do We Find Managerial Accountants in an Organization?

- **Line** personnel are directly involved in carrying out the mission of the organization (e.g., assembly workers in a factory, doctors in a hospital, teachers in a school).

- **Staff** personnel (accountants, lawyers, personnel directors, and other administrative positions) provide support for the organization's mission.

  - An accountant in a CPA firm would be in a line position, because the organization's mission is providing accounting services. In contrast, an accountant at a university would be in a staff position.

- The **chief financial officer (CFO)** or **controller** is the chief accountant responsible for the supervision of the accounting department, preparation of reports, and the interpretation of information to line managers.

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- The **treasurer** is responsible for raising capital, safeguarding assets, and managing investments, insurance coverage, and the credit policy of an organization.

- The **internal auditor** reviews accounting procedures, reports, and performance on behalf of top management.

- More and more, managerial accountants work throughout an entire enterprise and are deployed in cross-functional management teams, working with top executives and personnel from a variety of functional areas (e.g., marketing, production, engineering, and operations).

VII. The Operational Context of Managerial Accounting

- More attention is being paid to the **value chain—**the set of linked, value-creating activities, from conducting product research, to manufacturing, to providing customer service.

  - A number of activities occur prior to the production of a good or service (i.e., upstream activities) and several occur after (so-called downstream activities).

- To achieve an organization's goals, managers must understand the entire value chain as well as the related cost-causing factors **(cost drivers).**

- Managing the cost relationships within a value chain to the firm's advantage is called **strategic cost management**.

- A key objective of managerial accounting information is the management of an organization's capacity and the costs of providing that capacity.
  - Capacity is the upper limit on the amount of goods or services that an organization can produce in a specified period of time. There are various concepts of an organization's capacity:
    - Theoretical capacity refers to the upper limit on production of goods or services if everything works perfectly.
    - Practical capacity allows for normal occurrences such as machine downtime and employee fatigue or illness.

- Important questions for the managerial accounting system to address are:
  - What is an organization's *practical capacity?*
  - What are the costs of the *resources supplied* to provide that capacity?
  - How have those *resources* been *used* in creating value? (And,

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therefore, what is the unused capacity and how is it managed?)

- The vast trove of data that is generated in an organization, together with the data it can acquire to supplement and provide context for its internal data, is often referred to as **big data**. While presenting organizations with the opportunity to improve their operations, big data also brings big challenges.

VIII. Managerial Accounting as a Career

- The Institute of Management Accountants (IMA) administers the **Certified Management Accountant (CMA)** program. Students interested in internal accounting rather than employment in a public accounting firm may wish to pursue this designation.

IX. Managerial Accounting and the Ethical Climate of Business

- There is a fairly long history of corporate scandals that have involved mismanagement, alleged ethical lapses, and criminal behavior. Causes of these scandals were attributable to:
  - Greedy corporate executives, managers who made over-reaching business deals, and a lack of oversight by boards of directors and audit committees.
  - Substandard work by external auditors, a lack of sufficient probing by Wall Street analysts and the financial press, and pressure to meet market expectations.
- Various reforms have been implemented to remedy deficiencies in corporate governance and accounting. For example, after the notorious Enron scandal, in 2002 the Sarbanes-Oxley Act was passed. Its impact has been significant. It both:
  - Created the Public Company Accounting Oversight Board (PCAOB) to establish auditing standards and provide for an audit quality review process, and
  - Limited the types of non-audit work that public accounting firms can perform for their audit clients.

- Professional ethics require high standards of conduct from management accountants in the areas of competence, confidentiality, integrity, and

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credibility.

Teaching Tip: If you plan to highlight ethics throughout the course, you may want to spend extra time in class discussing the *Focus on Ethics* box at the end of this chapter. The box summarizes the standards of conduct just noted by the use of various detailed examples.

Teaching Overview

The main objective of the first two class meetings is to help students understand the overall context in which managerial accounting satisfies the information needs of an enterprise. I urge students to think not only about the discipline in its current form but also how it should evolve to meet the changing needs of organizations. Therefore, the first two classes include not only the usual discussion of the syllabus but also the role of the management accountant in an organization, the differences between financial accounting and managerial accounting, managerial accounting as a tool for managers, and emerging trends in the field. It is especially important to stress the cost-benefit theme, as cost-benefit analysis will surface throughout the course and text.

Students have very insightful thoughts on the emerging trends in business today. Therefore, I try to generate some discussion of their ideas early on. (I also want to communicate the need for student participation—not always an easy task if the group is large.) After some discussion, I like to conclude the second class by having the students suggest some accounting information needs that they feel managers have in the current business environment. Their suggestions usually include: how much does my product or service cost? How much inventory should I have on hand? At what point does my business break even? How do I put together a budget? How do I project cash flows? As class ends, I tell students that these are the very issues we will be working on during the semester and that one of our first tasks will be to answer the basic question, "How can we calculate the cost to produce a product or service?" In summary, by the end of the second class, students should have a basic understanding of managerial accounting's purpose and appreciate the need to study the discipline.

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Links to the Text

Homework Grid – CHAPTER 1

Item No.	*Learning Objectives*	*Completion Time (min.)*	*Special Features**
Exercises:			
1-25	1, 2, 3	25	
1-26	3, 4	20	
1-27	1, 3, 5	30	C
1-28	7, 9		C, G
Problems:			
1-29	5, 6, 8, 9	25	W
1-30	3	45	W
1-31	6, 7, 10, 11	25	E, W
1-32	4, 6, 9, 10	40	E, W
Cases:			
1-33	1, 3, 6, 10, 11	40	E, W

* W = written response E = Ethical issue G = Group work
I = International C = Internet use

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CHAPTER 2

BASIC COST MANAGEMENT CONCEPTS

Learning Objectives

2-1. Explain what is meant by the word *cost*.

2-2. Distinguish among product costs, period costs, and expenses.

2-3. Describe the role of costs in published financial statements.

2-4. List and describe four types of manufacturing processes.

2-5. Give examples of three types of manufacturing costs.

2-6. Prepare a schedule of cost of goods manufactured, a schedule of cost of goods sold, and an income statement for a manufacturer.

2-7. Understand the importance of identifying an organization's cost drivers.

2-8. Describe the behavior of variable and fixed costs, in total and on a per-unit basis.

2-9. Distinguish among direct, indirect, controllable, and uncontrollable costs.

2-10. Define and give examples of an opportunity cost, an out-of-pocket cost, a sunk cost, a differential cost, a marginal cost, and an average cost.

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Chapter Overview

I What Do We Mean by a Cost?
- A. Costs at the most basic level
- B. Product costs, period costs, and expenses

II. Costs on Financial Statements
- A. Income statement
  - 1. Operating Expenses
  - 2. Gross Profit and Operating Income
  - 3. Costs of manufactured inventory
- B. Balance sheet
  - 1. Raw-materials inventory
  - 2. Work-in-process inventory
  - 3. Finished-goods inventory

III. Manufacturing Operations and Manufacturing Costs
- A. Job shop, batch, assembly line, continuous flow
- B. Assembly manufacturing
- C. Manufacturing costs
  - 1. Direct material
  - 2. Direct labor
  - 3. Manufacturing overhead
    - i. Indirect material
    - ii. Indirect labor
    - iii. Other manufacturing costs
      - a) Service departments
      - b) Support departments
      - c) Overtime premium
      - d) Idle time
  - 4. Total manufacturing costs, conversion costs, prime costs

IV. Manufacturing Cost Flows
- A. Cost of goods manufactured
- B. Cost of goods sold

V. Non-Manufacturing Production Costs
- A. Service firms
- B. Non-profit organizations

VI. Basic Cost Management Concepts: Different Costs for Different Purposes
- A. Cost drivers

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B. Variable and fixed costs
   1. Variable costs
   2. Fixed costs
   3. Graphical perspectives
   4. Management Accounting Practice: Health Care Industry
      i. Affordable Care Act

C. Cost management and accountability
   1. Cost management systems
   2. Direct and indirect costs
   3. Controllable and uncontrollable costs

D. Economic cost concepts
   1. Opportunity costs
   2. Out-of-pocket costs
   3. Sunk costs
   4. Differential and incremental costs
   5. Marginal and average Costs

E. Costs and benefits of information

VII. Costs in the Service Industry
A. Product and period costs
B. Variable and fixed costs
C. Direct and indirect
D. Controllable and uncontrollable costs
D. Opportunity, out-of-pocket, and sunk costs
E. Differential, marginal, and average costs

Key Lecture Concepts

I. What Do We Mean by a Cost?

- A **cost** is the sacrifice made to achieve a particular purpose.

- There are different costs for different purposes, with costs that are appropriate for one use being totally inappropriate for others (e.g., a cost that is used to determine inventory valuation may be irrelevant in deciding whether or not to manufacture that same product).

- An **expense** is defined as the cost incurred when an asset is used up or sold for the purpose of generating revenue. The terms "product cost" and "period cost" are used to describe the timing with which expenses are recognized.

  - **Product costs** are the costs of goods manufactured or the cost of

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goods purchased for resale. These costs are inventoried until the goods are sold.

- **Period costs** are all other non-product costs in an organization (e.g., selling and administrative). Such costs are not inventoried but are expensed as time passes.

II. Costs on Financial Statements

- Product costs are shown as cost of goods sold on the income statement when goods are sold. Income statements of service enterprises lack a cost-of-goods-sold section and instead reveal a firm's operating expenses.
- Product costs, housed on the balance sheet until sale, are found in three inventory accounts:
  - **Raw materials**—materials that await production
  - **Work in process**—partially completed production
  - **Finished goods**—completed production that awaits sale
- ***Gross profit*** (sometimes called ***gross margin***) is the portion of revenues left after deducting just the costs that have been classified as cost of sales (cost of goods/products sold), without considering any other costs of operating the company.
- ***Operating income*** (sometimes called ***operating profit***) goes one step further to report the profit remaining from revenues after deducting both cost of sales *and* all period costs of operations

III. Manufacturing Operations and Manufacturing Costs

- There are various types of production processes; for example:
  - *Job shop* – low production volume, little standardization; one-of-a-kind products
  - *Batch* – multiple products; low volume
  - *Assembly line* – a few major products; higher volume
  - *Continuous flow* – high volume; highly standardized commodity

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products

- **Direct materials—**materials easily traced to a finished product (e.g., the seat on a bicycle)

- **Direct labor—**the wages of anyone who works directly on the product (e.g., the assembly-line wages of the bicycle manufacturer)

- **Manufacturing overhead—**all other manufacturing costs such as:

  - **Indirect materials—**materials and supplies other than those classified as direct materials.

  - **Indirect labor—**personnel who do not work directly on the product (e.g., manufacturing supervisors), and

  - Other manufacturing costs not easily traceable to a finished good (insurance, property taxes, depreciation, utilities, and service/support department costs). Overtime premiums and the cost of idle time are also accounted for as overhead.

  - **Idle time —** time that is not spent productively by an employee due to such events as equipment breakdowns or new setups of production runs.

- **Conversion cost** (the cost to convert direct materials into finished product): direct labor + manufacturing overhead

- **Prime cost:** direct material + direct labor

IV. Manufacturing Cost Flows

- Manufacturing costs (direct materials, direct labor, and manufacturing overhead) are "put in process" and attached to work-in-process inventory. The goods are completed (finished goods), and the costs are then passed along to cost of goods sold upon sale.

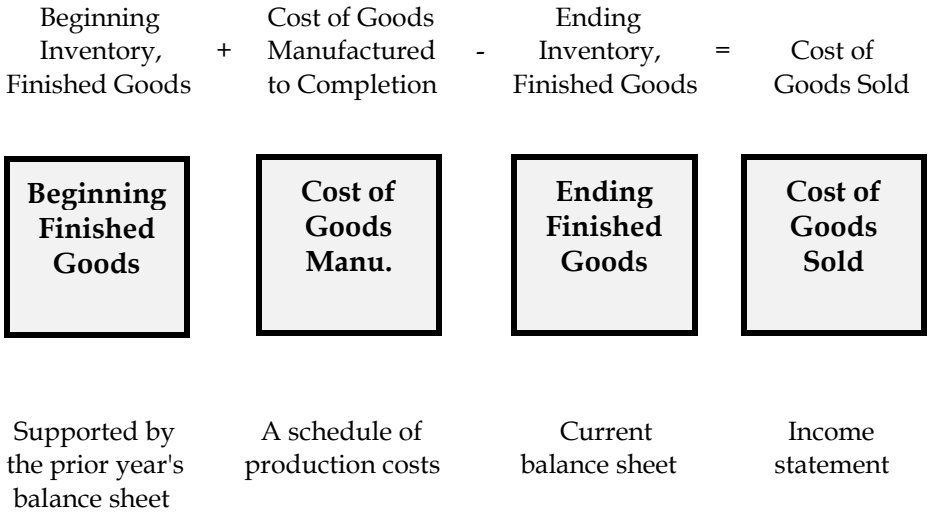
- **Cost of goods manufactured:** Direct materials used + direct labor + manufacturing overhead + beginning work-in-process inventory - ending work-in-process inventory

  - This amount is transferred from work-in-process inventory to finished-goods inventory when goods are completed.

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- Product costs and cost of goods sold for a manufacturer:



- Production-cost concepts are applicable to service businesses and nonprofit organizations. For example, the direct-materials concept can be applied to the food consumed in a restaurant or the jet fuel used by an airline. Similarly, direct labor would be equivalent to the cooks in a restaurant and the flight crews of an airline.

V. Production costs in service industry firms and nonprofit organizations

- The same classifications apply. Service firms can have direct material and direct labor costs just as manufacturing firms do. But they are not product costs, but rather period costs that are recorded in the accounting period of the expenditure.

- Service cannot be inventoried for a future sale.

VI. Basic Cost Management Concepts: Different Costs for Different Purposes

- A **cost driver** is any event or activity that causes costs to be incurred. Cost driver examples include labor hours in manual assembly work and machine hours in automated production settings.

  - The higher the degree of correlation between a cost-pool increase and the increase in its cost driver, the better the cost management information.

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- Variable and fixed costs

  - **Variable costs** move in direct proportion to a change in activity. For example, in the manufacture of bicycles, the total cost of bicycle seats goes up in proportion to the number of bicycles produced. However, the cost per unit (i.e., per seat) remains constant.

  - **Fixed costs** remain constant in total as the level of activity changes. For instance, straight-line depreciation of a bicycle plant remains the same whether 100 bicycles or 1,000 bicycles are produced. However, the depreciation cost per unit fluctuates because this constant total is spread over a smaller or greater volume.

- A ***cost management system*** is a management planning and control system with the following objectives.:

  - Measure the cost of the resources consumed in performing the organization's significant *activities* and measure the unused capacity of those resources.

  - Identify and eliminate ***non–value-added costs*.** These are the costs of *activities* that can be eliminated with no deterioration of product quality, performance, or perceived value.

  - Determine the efficiency and effectiveness of all major *activities* performed in the enterprise.

  - Identify and evaluate new *activities* that can improve the future performance of the organization.

  - ***Activity-based costing (ABC)*** systems accumulate the costs of the organization's significant activities and are assigned to goods or services in accordance with how the activities are used in the production of those goods and services. Using an activity-based costing system to improve the operations of an organization is called ***activity-based management***, or ***ABM***.

- Direct and indirect costs

  - An entity (e.g., a specific product, service, or department) to which a cost is assigned is commonly known as a **cost object.**

  - A **direct cost** is one that can be easily traced to a cost object.

    - If a college department has been defined as the cost object,

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professors' salaries and administrative assistants' salaries are direct costs of the department (just as assembly workers' wages are direct costs of a manufacturing department).

- An **indirect cost** is a cost that cannot be easily traced to a cost object.
  - For example, the costs of a university's controller, president, campus security, and groundskeeper cannot be directly traceable to a specific department, as these individuals service the entire university. (Similarly, a factory guard's salary is not traceable to only one department and is, thus, considered indirect to all departments.)
- A cost management system strives to trace costs to the objects that caused them so that managers can isolate responsibility for spending and objectively evaluate operations.

> *Teaching Tip:* When discussing indirect costs, you may want to cite a hospital's medical and surgical supplies as an example. Such items do not appear to be a primary target for trimming; however, these indirect costs often account for a sizable portion of a hospital's operating costs. Understanding indirect costs has become more valuable in a managed-care environment because it helps hospitals negotiate fixed-fee contracts.

- Controllable and uncontrollable costs
  - **Controllable costs—**costs over which a manager has influence (e.g., direct materials)
  - **Uncontrollable costs—**costs over which a manager has no influence (e.g., the salary of a firm's CEO from the production manager's viewpoint)
- **Opportunity cost—**the benefit forgone by choosing an alternative course of action (e.g., the wages forgone when a student decides to attend college full-time rather than be employed)
- **Out-of-pocket cost—**a cost that requires a cash outlay
- **Sunk cost—**a cost incurred in the past that cannot be changed by future

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action (e.g., the cost of existing inventory or equipment)

- ➢ Such costs are not relevant for decision making.

- **Differential cost—**the net difference in cost between two alternative courses of action

  - ➢ **Incremental cost—**the increase in cost from one alternative to another

- **Marginal cost—**the extra cost incurred when one additional unit is produced

- **Average cost per unit—**total cost divided by the units of activity

- Accountants must weigh the benefits of providing information against the costs of generating, communicating, and using that information. The goal is to use information effectively and avoid information overload.

VII. Costs in the Service Industry

- The preceding costs are relevant in service providers as well as for manufacturing entities.

Teaching Overview

The main purpose of Chapter 2 is to expand the way in which costs are defined and viewed. After completing a course in financial accounting, students are very much geared into thinking about functional costs (depreciation, utilities, and commissions) for an entire organization. While this is useful information to an outside creditor or investor, it is insufficient with respect to helping internal managers do their jobs effectively. Managers must also consider cost behavior, controllability, costs incurred by smaller segments, and so on. An initial reminder of these facts generally opens a discussion of additional ways of viewing financial information. It is worthwhile to spend a few extra minutes in the area of cost behavior since it is so fundamental to later topics.

Before discussing manufacturing costs, I ask for a show of hands from students who have actually visited a manufacturing plant. The typical, small number of hands serves

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as a reminder that many students have little idea of what a factory "looks like" and does. Pictures and videos are helpful in providing a context for the concepts being discussed—even a field trip to a local manufacturer is a good idea. This is also an excellent time to point out that even if a student does not plan to work in production management, he or she may well work in accounting, finance, or marketing for a company that makes a product. Therefore, being conversant in the language and concepts of cost accounting will be useful. Accounting techniques in manufacturing are frequently transferable to the service sector, and this fact should be emphasized in class.

In summary, Chapter 2 discusses the many ways that costs can be categorized. Chapter 3 then follows with a discussion of a system to track product costs and answers the age-old question, "How much does this cost?"

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Links to the Text

Homework Grid – CHAPTER 2

Item No.	*Learning Objectives*	*Completion Time (min.)*	*Special Features**
Exercises:			
2-24	1, 3, 6	10	
2-25	5	10	
2-26	5	10	
2-27	4	30	C
2-28	2, 8, 9	20	
2-29	1, 3, 6	25	
2-30	1, 8	15	
2-31	1, 8, 10	15	
2-32	1, 10	5	I
2-33	1, 10	5	
2-34	1, 9, 10	5	
2-35	1, 10	10	
2-36	1, 10	15	
Problems:			
2-37	3, 4	20	
2-38	5, 6	30	
2-39	5, 6	25	
2-40	5, 6, 8	25	
2-41	2, 5	40	S
2-42	2, 5, 10	25	
2-43	1, 3, 5, 6	35	
2-44	1, 3, 5, 9	15	
2-45	5, 8, 9	20	
2-46	1, 3, 5, 9, 10	20	
2-47	8, 9	15	
2-48	8, 9	25	
2-49	1, 3, 9	10	
2-50	1, 2, 3	10	
2-51	7, 8	15	
2-52	4, 10	15	
2-53	1, 3, 9, 10	20	
2-54	1, 3	40	W
2-55	7, 10	10	

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2-56	3, 8, 9, 10	25	
2-57	7, 8, 10	25	
2-58	8, 10	15	
Cases:			
2-59	1, 9, 10	30	E, W
2-60	7, 8, 10	50	W, G

* W = Written response E = Ethical issue G = Group work
I = International C = Internet use S = Spreadsheet

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