



A Look Back

Chapter 9 focused on cost allocation and performance measurement. We identified several reports useful in measuring and analyzing the activities of a company, its departments, and its managers.



A Look at This Chapter

This chapter explains several tools and procedures useful for making and evaluating short-term managerial decisions. It also describes how to assess the consequences of such decisions.



A Look Ahead

Chapter 11 focuses on capital budgeting decisions. It explains and illustrates several methods that help identify projects with the higher return on investment.

10

Chapter

Relevant Costing for Managerial Decisions

Learning Objectives

CAP

Conceptual

C1 Describe the importance of relevant costs for short-term decisions. (p. 364)

Analytical

A1 Evaluate short-term managerial decisions using relevant costs. (p. 365)

A2 Determine product selling price based on total costs. (p. 372)

Procedural

P1 Identify relevant costs and apply them to managerial decisions. (p. 366)



LP10



Decision Feature

Batter Up



RED DEER, CANADA—Jared Greenberg, of the Red Deer Riggers, and Dan Zinger of the Red Deer Stags, dream to make it to the major leagues . . . not as players, but as makers of baseball bats. Their start-up company, **Prairie Sticks Bat Company (PrairieSticks.com)**, started in Jared's workshop with a hand lathe and a piece of wood when local amateur players had trouble getting maple bats from manufacturers. Jared says he began producing bats for his teammates and friends "just like you would do in your middle school shop class."

Prairie Sticks' bats are made from four different types of wood, each with different prices (the company also makes fungo bats and training bats). Jared and Dan use product contribution margins in determining their best sales mix. This is especially important given their constraints on machine hours and labor—they have only one hydraulic tracing lathe and no other employees that make bats.

This past year they sold 1,500 bats. With production growth comes new business questions. Do we take a one-time deal with a buyer? Do we scrap or rework unacceptable inventory? Do we make or buy certain raw materials? These questions need answers. Jared and Dan focus on relevant costs and incremental revenues for insight into answering

"Now batting, a 34-ounce Prairie Sticks double-dipped black maple bat!" —PA Announcer

those questions. If a customer wants a bat in a color Prairie Sticks does not stock, the company charges a higher price to cover the incremental cost of the new color. The company makes novelty bats, unusable for play but fine for gifts and awards, out of inferior wood. These novelty bats sell at reduced prices, but enable the company to avoid costly rework and processing costs. They also sell apparel and hats, made by outside manufacturers.

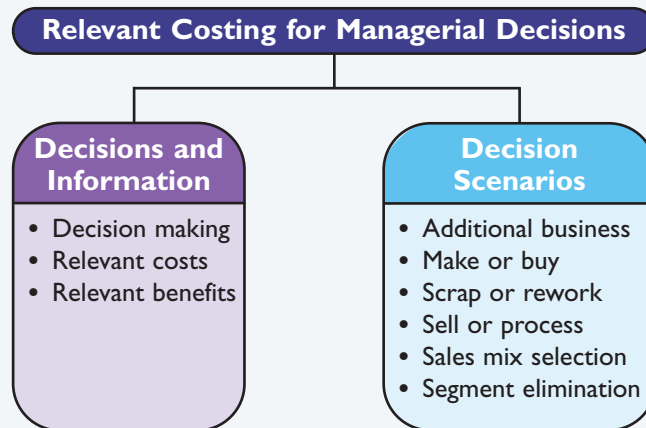
Prairie Sticks now makes bats for big leaguers. It uses the same wood as the major batmakers; and \$100,000 worth of equipment, including the hydraulic lathe, can turn out an unfinished bat in less than two minutes. Soon, they hope to step to the plate to accept additional business.

A recent news release reported that a minor league player had been traded for "10 Prairie Sticks double-dipped maple bats, black," which led to major publicity and a surge in orders. "It's been crazy," says Jared. "[Since] this story has broken . . . we're on the verge of picking up our Major League vendor's license," explains Dan. That would be a tape-measure home run.

[Sources: *Prairie Sticks Bat Company Website*, January 2009; *AlbertaLocalNews.com*, May 2008; *Fox Sports on MSN.com*, May 2008; *Edmonton CityTV.com* interview, May 2008]

Making business decisions involves choosing between alternative courses of action. Many factors affect business decisions, yet analysis typically focuses on finding the alternative that offers the highest return on investment or the greatest reduction

in costs. In all situations, managers can reach a sounder decision if they identify the consequences of alternative choices in financial terms. This chapter explains several methods of analysis that can help managers make short-term business decisions.



This chapter focuses on methods that use accounting information to make important managerial decisions. Most of these scenarios involve short-term decisions. This differs from methods used for longer-term managerial decisions that are described in the next chapter and in several other chapters of this book.

Decisions and Information



Video 10.1

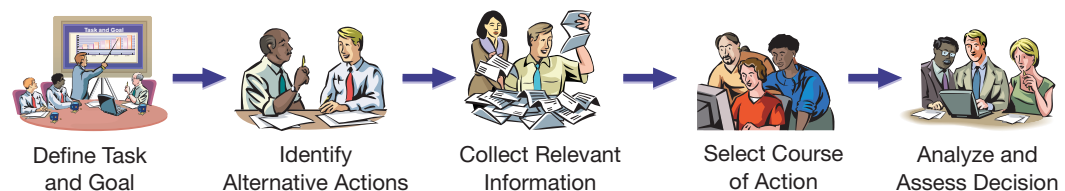
This section explains how managers make decisions and the information relevant to those decisions.

Decision Making

Managerial decision making involves five steps: (1) define the decision task, (2) identify alternative courses of action, (3) collect relevant information and evaluate each alternative, (4) select the preferred course of action, and (5) analyze and assess decisions made. These five steps are illustrated in Exhibit 10.1.

EXHIBIT 10.1

Managerial Decision Making



Both managerial and financial accounting information play an important role in most management decisions. The accounting system is expected to provide primarily *financial* information such as performance reports and budget analyses for decision making. *Nonfinancial* information is also relevant, however; it includes information on environmental effects, political sensitivities, and social responsibility.

Relevant Costs

C1 Describe the importance of relevant costs for short-term decisions.

Most financial measures of revenues and costs from accounting systems are based on historical costs. Although historical costs are important and useful for many tasks such as product pricing and the control and monitoring of business activities, we sometimes find that an analysis of *relevant costs*, or *avoidable costs*, is especially useful. Three types of costs are pertinent to our discussion of relevant costs: sunk costs, out-of-pocket costs, and opportunity costs.

A *sunk cost* arises from a past decision and cannot be avoided or changed; it is irrelevant to future decisions. An example is the cost of computer equipment previously purchased by a company. Most of a company's allocated costs, including fixed overhead items such as depreciation and administrative expenses, are sunk costs.

An *out-of-pocket cost* requires a future outlay of cash and is relevant for current and future decision making. These costs are usually the direct result of management's decisions. For instance, future purchases of computer equipment involve out-of-pocket costs.

An *opportunity cost* is the potential benefit lost by taking a specific action when two or more alternative choices are available. An example is a student giving up wages from a job to attend summer school. Companies continually must choose from alternative courses of action. For instance, a company making standardized products might be approached by a customer to supply a special (nonstandard) product. A decision to accept or reject the special order must consider not only the profit to be made from the special order but also the profit given up by devoting time and resources to this order instead of pursuing an alternative project. The profit given up is an opportunity cost. Consideration of opportunity costs is important. The implications extend to internal resource allocation decisions. For instance, a computer manufacturer must decide between internally manufacturing a chip versus buying it externally. In another case, management of a multidivisional company must decide whether to continue operating or close a particular division.

Besides relevant costs, management must also consider the relevant benefits associated with a decision. **Relevant benefits** refer to the additional or *incremental* revenue generated by selecting a particular course of action over another. For instance, a student must decide the relevant benefits of taking one course over another. In sum, both relevant costs and relevant benefits are crucial to managerial decision making.

Example: Depreciation and amortization are allocations of the original cost of plant and intangible assets. Are they out-of-pocket costs? Answer: No; they are sunk costs.

Point: Opportunity costs are not entered in accounting records. This does not reduce their relevance for managerial decisions.

Managerial Decision Scenarios

Managers experience many different scenarios that require analyzing alternative actions and making a decision. We describe several different types of decision scenarios in this section. We set these tasks in the context of FasTrac, an exercise supplies and equipment manufacturer introduced earlier. *We treat each of these decision tasks as separate from each other.*

Additional Business

FasTrac is operating at its normal level of 80% of full capacity. At this level, it produces and sells approximately 100,000 units of product annually. Its per unit and annual total costs are shown in Exhibit 10.2.

A1 Evaluate short-term managerial decisions using relevant costs.



Video 10.1

	Per Unit	Annual Total
Sales (100,000 units)	\$10.00	\$1,000,000
Direct materials	(3.50)	(350,000)
Direct labor	(2.20)	(220,000)
Overhead	(1.10)	(110,000)
Selling expenses	(1.40)	(140,000)
Administrative expenses	(0.80)	(80,000)
Total costs and expenses	(9.00)	(900,000)
Operating income	<u>\$ 1.00</u>	<u>\$ 100,000</u>

EXHIBIT 10.2

Selected Operating Income Data

A current buyer of FasTrac's products wants to purchase additional units of its product and export them to another country. This buyer offers to buy 10,000 units of the product at \$8.50 per unit, or \$1.50 less than the current price. The offer price is low, but FasTrac is considering the proposal because this sale would be several times larger than any single previous sale and it would use idle capacity. Also, the units will be exported, so this new business will not affect current sales.



P1 Identify relevant costs and apply them to managerial decisions.

To determine whether to accept or reject this order, management needs to know whether accepting the offer will increase net income. The analysis in Exhibit 10.3 shows that if management relies on per unit historical costs, it would reject the sale because it yields a loss. However, historical costs are *not* relevant to this decision. Instead, the relevant costs are the additional costs, called **incremental costs**. These costs, also called *differential costs*, are the additional costs incurred if a company pursues a certain course of action. FasTrac’s incremental costs are those related to the added volume that this new order would bring.

EXHIBIT 10.3

Analysis of Additional Business Using Historical Costs

	Per Unit	Total
Sales (10,000 additional units)	\$ 8.50	\$ 85,000
Direct materials	(3.50)	(35,000)
Direct labor	(2.20)	(22,000)
Overhead	(1.10)	(11,000)
Selling expenses	(1.40)	(14,000)
Administrative expenses	(0.80)	(8,000)
Total costs and expenses	(9.00)	(90,000)
Operating loss	<u>\$ (0.50)</u>	<u>\$ (5,000)</u>

To make its decision, FasTrac must analyze the costs of this new business in a different manner. The following information regarding the order is available:

- Manufacturing 10,000 additional units requires direct materials of \$3.50 per unit and direct labor of \$2.20 per unit (same as for all other units).
- Manufacturing 10,000 additional units adds \$5,000 of incremental overhead costs for power, packaging, and indirect labor (all variable costs).
- Incremental commissions and selling expenses from this sale of 10,000 additional units would be \$2,000 (all variable costs).
- Incremental administrative expenses of \$1,000 for clerical efforts are needed (all fixed costs) with the sale of 10,000 additional units.

We use this information, as shown in Exhibit 10.4, to assess how accepting this new business will affect FasTrac’s income.

EXHIBIT 10.4

Analysis of Additional Business Using Relevant Costs

	Current Business	Additional Business	Combined
Sales	\$1,000,000	\$ 85,000	\$1,085,000
Direct materials	(350,000)	(35,000)	(385,000)
Direct labor	(220,000)	(22,000)	(242,000)
Overhead	(110,000)	(5,000)	(115,000)
Selling expenses	(140,000)	(2,000)	(142,000)
Administrative expense	(80,000)	(1,000)	(81,000)
Total costs and expenses	(900,000)	(65,000)	(965,000)
Operating income	<u>\$ 100,000</u>	<u>\$ 20,000</u>	<u>\$ 120,000</u>

The analysis of relevant costs in Exhibit 10.4 suggests that the additional business be accepted. It would provide \$85,000 of added revenue while incurring only \$65,000 of added costs. This would yield \$20,000 of additional pretax income, or a pretax profit margin of 23.5%. More generally, FasTrac would increase its income with any price that exceeded \$6.50 per unit (\$65,000 incremental cost/10,000 additional units).

An analysis of the incremental costs pertaining to the additional volume is always relevant for this type of decision. We must proceed cautiously, however, when the additional volume approaches or exceeds the factory’s existing available capacity. If the additional volume requires

the company to expand its capacity by obtaining more equipment, more space, or more personnel, the incremental costs could quickly exceed the incremental revenue. Another cautionary note is the effect on existing sales. All new units of the extra business will be sold outside FasTrac’s normal domestic sales channels. If accepting additional business would cause existing sales to decline, this information must be included in our analysis. The contribution margin lost from a decline in sales is an opportunity cost. If future cash flows over several time periods are affected, their net present value also must be computed and used in this analysis.

The key point is that *management must not blindly use historical costs, especially allocated overhead costs*. Instead, the accounting system needs to provide information about the incremental costs to be incurred if the additional business is accepted.

Example: Exhibit 10.4 uses quantitative information. Suggest some qualitative factors to be considered when deciding whether to accept this project. *Answer:* (1) Impact on relationships with other customers and (2) Improved relationship with customer buying additional units.

Decision Maker



Partner You are a partner in a small accounting firm that specializes in keeping the books and preparing taxes for clients. A local restaurant is interested in obtaining these services from your firm. Identify factors that are relevant in deciding whether to accept the engagement. [Answer—p. 375]

Make or Buy

The managerial decision to make or buy a component for one of its current products is commonplace and depends on incremental costs. To illustrate, FasTrac has excess productive capacity it can use to manufacture Part 417, a component of the main product it sells. The part is currently purchased and delivered to the plant at a cost of \$1.20 per unit. FasTrac estimates that making Part 417 would cost \$0.45 for direct materials, \$0.50 for direct labor, and an undetermined amount for overhead. The task is to determine how much overhead to add to these costs so we can decide whether to make or buy Part 417. If FasTrac’s normal predetermined overhead application rate is 100% of direct labor cost, we might be tempted to conclude that overhead cost is \$0.50 per unit, computed as 100% of the \$0.50 direct labor cost. We would then mistakenly conclude that total cost is \$1.45 (\$0.45 of materials + \$0.50 of labor + \$0.50 of overhead). A wrong decision in this case would be to conclude that the company is better off buying the part at \$1.20 each than making it for \$1.45 each.

Instead, as we explained earlier, only incremental overhead costs are relevant in this situation. Thus, we must compute an *incremental overhead rate*. Incremental overhead costs might include, for example, additional power for operating machines, extra supplies, added cleanup costs, materials handling, and quality control. We can prepare a per unit analysis in this case as shown in Exhibit 10.5.

	Make	Buy
Direct materials	\$0.45	—
Direct labor	0.50	—
Overhead costs	[?]	—
Purchase price	—	\$ 1.20
Total incremental costs	<u>\$0.95 + [?]</u>	<u>\$1.20</u>

EXHIBIT 10.5

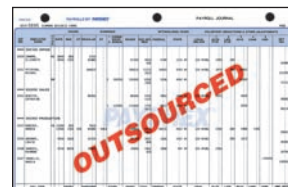
Make or Buy Analysis

We can see that if incremental overhead costs are less than \$0.25 per unit, the total cost of making the component is less than the purchase price of \$1.20 and FasTrac should make the part. FasTrac’s decision rule in this case is that any amount of overhead less than \$0.25 per unit yields a total cost for Part 417 that is less than the \$1.20 purchase price. FasTrac must consider several nonfinancial factors in the make or buy decision, including product quality, timeliness of delivery (especially in a just-in-time setting), reactions of customers and suppliers, and other intangibles such as employee morale and workload. It must also consider whether making the part requires incremental fixed costs to expand plant capacity. When these added factors are considered, small cost differences may not matter.

Point: Managers must consider nonfinancial factors when making decisions.

Decision Insight

Make or Buy Services Companies apply make or buy decisions to their services. Many now outsource their payroll activities to a payroll service provider. It is argued that the prices paid for such services are close to what it costs them to do it, and without the headaches.



Scrap or Rework

Managers often must make a decision on whether to scrap or rework products in process. Remember that costs already incurred in manufacturing the units of a product that do not meet quality standards are sunk costs that have been incurred and cannot be changed. Sunk costs are irrelevant in any decision on whether to sell the substandard units as scrap or to rework them to meet quality standards.

To illustrate, assume that FasTrac has 10,000 defective units of a product that have already cost \$1 per unit to manufacture. These units can be sold as is (as scrap) for \$0.40 each, or they can be reworked for \$0.80 per unit and then sold for their full price of \$1.50 each. Should FasTrac sell the units as scrap or rework them?

To make this decision, management must recognize that the already incurred manufacturing costs of \$1 per unit are sunk (unavoidable). These costs are *entirely irrelevant* to the decision. In addition, we must be certain that all costs of reworking defects, including interfering with normal operations, are accounted for in our analysis. For instance, reworking the defects means that FasTrac is unable to manufacture 10,000 *new* units with an incremental cost of \$1 per unit and a selling price of \$1.50 per unit, meaning it incurs an opportunity cost equal to the lost \$5,000 net return from making and selling 10,000 new units. This opportunity cost is the difference between the \$15,000 revenue (10,000 units × \$1.50) from selling these new units and their \$10,000 manufacturing costs (10,000 units × \$1). Our analysis is reflected in Exhibit 10.6.

EXHIBIT 10.6

Scrap or Rework Analysis

	Scrap	Rework
Sale of scrapped/reworked units	\$ 4,000	\$ 15,000
Less costs to rework defects		(8,000)
Less opportunity cost of not making new units		(5,000)
Incremental net income	<u>\$4,000</u>	<u>\$ 2,000</u>

The analysis yields a \$2,000 difference in favor of scrapping the defects, yielding a total incremental net income of \$4,000. If we had failed to include the opportunity costs of \$5,000, the rework option would have shown an income of \$7,000 instead of \$2,000, mistakenly making the reworking appear more favorable than scrapping.

Quick Check

Answers—p. 376

- A company receives a special order for 200 units that requires stamping the buyer's name on each unit, yielding an additional fixed cost of \$400 to its normal costs. Without the order, the company is operating at 75% of capacity and produces 7,500 units of product at the following costs:

Direct materials	\$37,500
Direct labor	60,000
Overhead (30% variable)	20,000
Selling expenses (60% variable)	25,000

The special order will not affect normal unit sales and will not increase fixed overhead and selling expenses. Variable selling expenses on the special order are reduced to one-half the normal amount. The price per unit necessary to earn \$1,000 on this order is (a) \$14.80, (b) \$15.80, (c) \$19.80, (d) \$20.80, or (e) \$21.80.

- What are the incremental costs of accepting additional business?

Sell or Process

The managerial decision to sell partially completed products as is or to process them further for sale depends significantly on relevant costs. To illustrate, suppose that FasTrac has 40,000 units of partially finished Product Q. It has already spent \$0.75 per unit to manufacture these 40,000 units at a \$30,000 total cost. FasTrac can sell the 40,000 units to another manufacturer as raw material for \$50,000. Alternatively, it can process them further and produce finished products X, Y, and Z at an incremental cost of \$2 per unit. The added processing yields the products and revenues shown in Exhibit 10.7. FasTrac must decide whether the added revenues from selling finished products X, Y, and Z exceed the costs of finishing them.

Product	Price	Units	Revenues
Product X	\$4.00	10,000	\$ 40,000
Product Y	6.00	22,000	132,000
Product Z	8.00	6,000	48,000
Spoilage	—	2,000	0
Totals		<u>40,000</u>	<u>\$220,000</u>

EXHIBIT 10.7

Revenues from Processing Further

Exhibit 10.8 shows the two-step analysis for this decision. First, FasTrac computes its incremental revenue from further processing Q into products X, Y, and Z. This amount is the difference between the \$220,000 revenue from the further processed products and the \$50,000 FasTrac will give up by not selling Q as is (a \$50,000 opportunity cost). Second, FasTrac computes its incremental costs from further processing Q into X, Y, and Z. This amount is \$80,000 (40,000 units × \$2 incremental cost). The analysis shows that FasTrac can earn incremental net income of \$90,000 from a decision to further process Q. (Notice that the earlier incurred \$30,000 manufacturing cost for the 40,000 units of Product Q does not appear in Exhibit 10.8 because it is a sunk cost and as such is irrelevant to the decision.)

Example: Does the decision change if incremental costs in Exhibit 10.8 increase to \$4 per unit and the opportunity cost increases to \$95,000? *Answer:* Yes. There is now an incremental net loss of \$35,000.

Revenue if processed	\$220,000
Revenue if sold as is	(50,000)
Incremental revenue	170,000
Cost to process	(80,000)
Incremental net income	<u>\$ 90,000</u>

EXHIBIT 10.8

Sell or Process Analysis

Quick Check

Answers—p. 376

3. A company has already incurred a \$1,000 cost in partially producing its four products. Their selling prices when partially and fully processed follow with additional costs necessary to finish these partially processed units:

Product	Unfinished Selling Price	Finished Selling Price	Further Processing Costs
Alpha	\$300	\$600	\$150
Beta	450	900	300
Gamma	275	425	125
Delta	150	210	75

Which product(s) should *not* be processed further; (a) Alpha, (b) Beta, (c) Gamma, or (d) Delta?

4. Under what conditions is a sunk cost relevant to decision making?

Sales Mix Selection

When a company sells a mix of products, some are likely to be more profitable than others. Management is often wise to concentrate sales efforts on more profitable products. If

Point: A method called *linear programming* is useful for finding the optimal sales mix for several products subject to many market and production constraints. This method is described in advanced courses.

production facilities or other factors are limited, an increase in the production and sale of one product usually requires reducing the production and sale of others. In this case, management must identify the most profitable combination, or *sales mix* of products. To identify the best sales mix, management must know the contribution margin of each product, the facilities required to produce each product, any constraints on these facilities, and its markets.

To illustrate, assume that FasTrac makes and sells two products, A and B. The same machines are used to produce both products. A and B have the following selling prices and variable costs per unit:

	Product A	Product B
Selling price per unit	\$5.00	\$7.50
Variable costs per unit	<u>3.50</u>	<u>5.50</u>
Contribution margin per unit	<u>\$1.50</u>	<u>\$2.00</u>



The variable costs are included in the analysis because they are the incremental costs of producing these products within the existing capacity of 100,000 machine hours per month. We consider three separate cases.

Case 1: Assume that (1) each product requires 1 machine hour per unit for production and (2) the markets for these products are unlimited. Under these conditions, FasTrac should produce as much of Product B as it can because of its larger contribution margin of \$2 per unit. At full capacity, FasTrac would produce \$200,000 of total contribution margin per month, computed as \$2 per unit times 100,000 machine hours.

Case 2: Assume that (1) Product A requires 1 machine hour per unit, (2) Product B requires 2 machine hours per unit, and (3) the markets for these products are unlimited. Under these conditions, FasTrac should produce as much of Product A as it can because it has a contribution margin of \$1.50 per machine hour compared with only \$1 per machine hour for Product B. Exhibit 10.9 shows the relevant analysis.

EXHIBIT 10.9

Sales Mix Analysis

	Product A	Product B
Selling price per unit	\$ 5.00	\$ 7.50
Variable costs per unit	<u>3.50</u>	<u>5.50</u>
Contribution margin per unit	\$ 1.50	\$ 2.00
Machine hours per unit	1.0	2.0
Contribution margin per machine hour	\$1.50	\$1.00

Example: For Case 2, if Product B's variable costs per unit increase to \$6, Product A's variable costs per unit decrease to \$3, and the same machine hours per unit are used, which product should FasTrac produce? *Answer:* Product A. Its contribution margin of \$2 per machine hour is higher than B's \$.75 per machine hour.

At its full capacity of 100,000 machine hours, FasTrac would produce 100,000 units of Product A, yielding \$150,000 of total contribution margin per month. In contrast, if it uses all 100,000 hours to produce Product B, only 50,000 units would be produced yielding a contribution margin of \$100,000. These results suggest that when a company faces excess demand and limited capacity, only the most profitable product per input should be manufactured.

Case 3: The need for a mix of different products arises when market demand is not sufficient to allow a company to sell all that it produces. For instance, assume that (1) Product A requires 1 machine hour per unit, (2) Product B requires 2 machine hours per unit, and (3) the market for Product A is limited to 80,000 units. Under these conditions, FasTrac should produce no more than 80,000 units of Product A. This would leave another 20,000 machine hours of capacity for making Product B. FasTrac should use this spare capacity to produce 10,000 units of Product B. This sales mix would maximize FasTrac's total contribution margin per month at an amount of \$140,000.

Point: FasTrac might consider buying another machine to reduce the constraint on production. A strategy designed to reduce the impact of constraints or bottlenecks, on production, is called the *theory of constraints*.

Decision Insight

Companies such as **Gap, Abercrombie & Fitch**, and **American Eagle** must continuously monitor and manage the sales mix of their product lists. Selling their products in hundreds of countries and territories further complicates their decision process. The contribution margin of each product is crucial to their product mix strategies.



Segment Elimination

When a segment such as a department or division is performing poorly, management must consider eliminating it. Segment information on either net income (loss) or its contribution to overhead is not sufficient for this decision. Instead, we must look at the segment's avoidable expenses and unavoidable expenses. **Avoidable expenses**, also called *escapable expenses*, are amounts the company would not incur if it eliminated the segment. **Unavoidable expenses**, also called *inescapable expenses*, are amounts that would continue even if the segment is eliminated.

To illustrate, FasTrac considers eliminating its treadmill division because its \$48,300 total expenses are higher than its \$47,800 sales. Classification of this division's operating expenses into avoidable or unavoidable expenses is shown in Exhibit 10.10.

	Total	Avoidable Expenses	Unavoidable Expenses
Cost of goods sold	\$ 30,000	\$ 30,000	—
Direct expenses			
Salaries expense	7,900	7,900	—
Depreciation expense—Equipment	200	—	\$ 200
Indirect expenses			
Rent and utilities expense	3,150	—	3,150
Advertising expense	400	400	—
Insurance expense	400	300	100
Service department costs			
Share of office department expenses	3,060	2,200	860
Share of purchasing expenses	3,190	1,000	2,190
Total	\$48,300	\$41,800	\$6,500

EXHIBIT 10.10

Classification of Segment Operating Expenses for Analysis

FasTrac's analysis shows that it can avoid \$41,800 expenses if it eliminates the treadmill division. Because this division's sales are \$47,800, eliminating it will cause FasTrac to lose \$6,000 of income. *Our decision rule is that a segment is a candidate for elimination if its revenues are less than its avoidable expenses.* Avoidable expenses can be viewed as the costs to generate this segment's revenues.

When considering elimination of a segment, we must assess its impact on other segments. A segment could be unprofitable on its own, but it might still contribute to other segments' revenues and profits. It is possible then to continue a segment even when its revenues are less than its avoidable expenses. Similarly, a profitable segment might be discontinued if its space, assets, or staff can be more profitably used by expanding existing segments or by creating new ones. Our decision to keep or eliminate a segment requires a more complex analysis than simply looking at a segment's performance report. Such reports provide useful information, but they do not provide all the information necessary for this decision.

Example: How can insurance be classified as either avoidable or unavoidable? *Answer:* Depends on whether the assets insured can be removed and the premiums canceled.

Example: Give an example of a segment that a company might profitably use to attract customers even though it might incur a loss. *Answer:* Warranty and post-sales services.

Qualitative Decision Factors



Managers must consider qualitative factors in making managerial decisions. Consider a decision on whether to buy a component from an outside supplier or continue to make it. Several qualitative decision factors must be considered. For example, the quality, delivery, and reputation of the proposed supplier are important. The effects from deciding not to make the component can include potential layoffs and impaired worker morale. Consider another situation in which a company is considering a one-time sale to a new customer at a special low price. Qualitative factors to consider in this situation include the effects of a low price on the company's image and the threat that regular customers might demand a similar price. The company must also consider whether this customer is really a one-time customer. If not, can it continue to offer this low price in the long run? Clearly, management cannot rely solely on financial data to make such decisions.

Quick Check

Answers—p. 376

5. What is the difference between avoidable and unavoidable expenses?
6. A segment is a candidate for elimination if (a) its revenues are less than its avoidable expenses, (b) it has a net loss, (c) its unavoidable expenses are higher than its revenues.

Decision Analysis

Setting Product Price

A2 Determine product selling price based on total costs.

Relevant costs are useful to management in determining prices for special short-term decisions. But longer run pricing decisions of management need to cover both variable and fixed costs, and yield a profit.

There are several methods to help management in setting prices. The *cost-plus* methods are probably the most common, where management adds a **markup** to cost to reach a target price. We will describe the **total cost method**, where management sets price equal to the product's total costs plus a desired profit on the product. This is a four-step process:

1. Determine total costs.

$$\text{Total costs} = \text{Production (direct materials, direct labor, and overhead)} + \text{Nonproduction (selling and administrative) costs}$$

2. Determine total cost per unit.

$$\text{Total cost per unit} = \text{Total costs} \div \text{Total units expected to be produced and sold}$$

3. Determine the dollar markup per unit.

$$\text{Markup per unit} = \text{Total cost per unit} \times \text{Markup percentage}$$

where Markup percentage = Desired profit/Total costs

4. Determine selling price per unit.

$$\text{Selling price per unit} = \text{Total cost per unit} + \text{Markup per unit}$$

To illustrate, consider a company that produces MP3 players. The company desires a 20% return on its assets of \$1,000,000, and it expects to produce and sell 10,000 players. The following additional company information is available:

Variable costs (per unit)	
Production costs	\$44
Nonproduction costs	6
Fixed costs (in dollars)	
Overhead	\$140,000
Nonproduction	60,000

We apply our four-step process to determine price.

1. Total costs = Production costs + Nonproduction costs
 = [(\$44 × 10,000 units) + \$140,000] + [(\$6 × 10,000 units) + \$60,000]
 = \$700,000
2. Total cost per unit = Total costs/Total units expected to be produced and sold
 = \$700,000/10,000
 = \$70
3. Markup per unit = Total cost per unit × (Desired profit/Total costs)
 = \$70 × [(20% × \$1,000,000)/\$700,000]
 = \$20
4. Selling price per unit = Total cost per unit + Markup per unit
 = \$70 + \$20
 = \$90

To verify that our price yields the \$200,000 desired profit (20% × \$1,000,000), we compute the following simplified income statement using the information above.

Sales (\$90 × 10,000)	\$900,000
Expenses	
Variable (\$50 × 10,000)	500,000
Fixed (\$140,000 + \$60,000)	200,000
Income	<u>\$200,000</u>

Companies use cost-plus pricing as a starting point for determining selling prices. Many factors determine price, including consumer preferences and competition.

Demonstration Problem

Determine the appropriate action in each of the following managerial decision situations.

1. Packer Company is operating at 80% of its manufacturing capacity of 100,000 product units per year. A chain store has offered to buy an additional 10,000 units at \$22 each and sell them to customers so as not to compete with Packer Company. The following data are available.

Costs at 80% Capacity	Per Unit	Total
Direct materials	\$ 8.00	\$ 640,000
Direct labor	7.00	560,000
Overhead (fixed and variable)	12.50	1,000,000
Totals	<u>\$27.50</u>	<u>\$2,200,000</u>

In producing 10,000 additional units, fixed overhead costs would remain at their current level but incremental variable overhead costs of \$3 per unit would be incurred. Should the company accept or reject this order?

2. Green Company uses Part JR3 in manufacturing its products. It has always purchased this part from a supplier for \$40 each. It recently upgraded its own manufacturing capabilities and has enough excess capacity (including trained workers) to begin manufacturing Part JR3 instead of buying it. The company prepares the following cost projections of making the part, assuming that overhead is allocated to the part at the normal predetermined rate of 200% of direct labor cost.

Direct materials	\$11
Direct labor	15
Overhead (fixed and variable) (200% of direct labor)	30
Total	<u>\$56</u>

The required volume of output to produce the part will not require any incremental fixed overhead. Incremental variable overhead cost will be \$17 per unit. Should the company make or buy this part?

- Gold Company's manufacturing process causes a relatively large number of defective parts to be produced. The defective parts can be (a) sold for scrap, (b) melted to recover the recycled metal for reuse, or (c) reworked to be good units. Reworking defective parts reduces the output of other good units because no excess capacity exists. Each unit reworked means that one new unit cannot be produced. The following information reflects 500 defective parts currently available.

Proceeds of selling as scrap	\$2,500
Additional cost of melting down defective parts	400
Cost of purchases avoided by using recycled metal from defects	4,800
Cost to rework 500 defective parts	
Direct materials	0
Direct labor	1,500
Incremental overhead	1,750
Cost to produce 500 new parts	
Direct materials	6,000
Direct labor	5,000
Incremental overhead	3,200
Selling price per good unit	40

Should the company melt the parts, sell them as scrap, or rework them?

Planning the Solution

- Determine whether Packer Company should accept the additional business by finding the incremental costs of materials, labor, and overhead that will be incurred if the order is accepted. Omit fixed costs that the order will not increase. If the incremental revenue exceeds the incremental cost, accept the order.
- Determine whether Green Company should make or buy the component by finding the incremental cost of making each unit. If the incremental cost exceeds the purchase price, the component should be purchased. If the incremental cost is less than the purchase price, make the component.
- Determine whether Gold Company should sell the defective parts, melt them down and recycle the metal, or rework them. To compare the three choices, examine all costs incurred and benefits received from the alternatives in working with the 500 defective units versus the production of 500 new units. For the scrapping alternative, include the costs of producing 500 new units and subtract the \$2,500 proceeds from selling the old ones. For the melting alternative, include the costs of melting the defective units, add the net cost of new materials in excess over those obtained from recycling, and add the direct labor and overhead costs. For the reworking alternative, add the costs of direct labor and incremental overhead. Select the alternative that has the lowest cost. The cost assigned to the 500 defective units is sunk and not relevant in choosing among the three alternatives.

Solution to Demonstration Problem

- This decision involves accepting additional business. Since current unit costs are \$27.50, it appears initially as if the offer to sell for \$22 should be rejected, but the \$27.50 cost includes fixed costs. When the analysis includes only *incremental* costs, the per unit cost is as shown in the following table. The offer should be accepted because it will produce \$4 of additional profit per unit (computed as \$22 price less \$18 incremental cost), which yields a total profit of \$40,000 for the 10,000 additional units.

Direct materials	\$ 8.00
Direct labor	7.00
Variable overhead (given)	<u>3.00</u>
Total incremental cost	<u>\$18.00</u>

- For this make or buy decision, the analysis must not include the \$13 nonincremental overhead per unit (\$30 – \$17). When only the \$17 incremental overhead is included, the relevant unit cost of

manufacturing the part is shown in the following table. It would be better to continue buying the part for \$40 instead of making it for \$43.

Direct materials	\$11.00
Direct labor	15.00
Variable overhead	17.00
Total incremental cost	<u>\$43.00</u>

3. The goal of this scrap or rework decision is to identify the alternative that produces the greatest net benefit to the company. To compare the alternatives, we determine the net cost of obtaining 500 marketable units as follows:

Incremental Cost to Produce 500 Marketable Units	Sell as Is	Melt and Recycle	Rework Units
Direct materials			
New materials	\$ 6,000	\$6,000	
Recycled metal materials		(4,800)	
Net materials cost		1,200	
Melting costs		400	
Total direct materials cost	6,000	1,600	
Direct labor	5,000	5,000	\$1,500
Incremental overhead	3,200	3,200	1,750
Cost to produce 500 marketable units	14,200	9,800	3,250
Less proceeds of selling defects as scrap	(2,500)		
Opportunity costs*			5,800
Net cost	<u>\$11,700</u>	<u>\$9,800</u>	<u>\$9,050</u>

* The \$5,800 opportunity cost is the lost contribution margin from not being able to produce and sell 500 units because of reworking, computed as $(\$40 - [\$14,200/500 \text{ units}]) \times 500 \text{ units}$.

The incremental cost of 500 marketable parts is smallest if the defects are reworked.

Summary

C1 Describe the importance of relevant costs for short-term decisions. A company must rely on relevant costs pertaining to alternative courses of action rather than historical costs. Out-of-pocket expenses and opportunity costs are relevant because these are avoidable; sunk costs are irrelevant because they result from past decisions and are therefore unavoidable. Managers must also consider the relevant benefits associated with alternative decisions.

A1 Evaluate short-term managerial decisions using relevant costs. Relevant costs are useful in making decisions such as to accept additional business, make or buy, and sell as is or process further. For example, the relevant factors in deciding whether to produce and sell additional units of product are incremental costs and incremental revenues from the additional volume.

A2 Determine product selling price based on total costs. Product selling price is estimated using total production and nonproduction costs plus a markup. Price is set to yield management's desired profit for the company.

P1 Identify relevant costs and apply them to managerial decisions. Several illustrations apply relevant costs to managerial decisions, such as whether to accept additional business; make or buy; scrap or rework products; sell products or process them further; or eliminate a segment and how to select the best sales mix.

Guidance Answers to **Decision Maker** and **Decision Ethics**



Partner You should identify the differences between existing clients and this potential client. A key difference is that the restaurant business has additional inventory components (groceries, vegetables, meats, etc.) and is likely to have a higher proportion of depreciable assets. These differences imply that the partner must spend more hours

auditing the records and understanding the business, regulations, and standards that pertain to the restaurant business. Such differences suggest that the partner must use a different "formula" for quoting a price to this potential client vis-à-vis current clients.

Guidance Answers to **Quick Checks**

1. e; Variable costs per unit for this order of 200 units follow:

Direct materials (\$37,500/7,500)	\$ 5.00
Direct labor (\$60,000/7,500)	8.00
Variable overhead [(0.30 × \$20,000)/7,500]	0.80
Variable selling expenses [(0.60 × \$25,000 × 0.5)/7,500]	1.00
Total variable costs per unit	<u>\$14.80</u>

Cost to produce special order: (200 × \$14.80) + \$400 = \$3,360.

Price per unit to earn \$1,000: (\$3,360 + \$1,000)/200 = 21.80.

2. They are the additional (new) costs of accepting new business.

3. d;

	Incremental benefits		Incremental costs
Alpha	\$300 (\$600 – \$300)	>	\$150 (given)
Beta	\$450 (\$900 – \$450)	>	\$300 (given)
Gamma	\$150 (\$425 – \$275)	>	\$125 (given)
Delta	\$ 60 (\$210 – \$150)	<	\$ 75 (given)

4. A sunk cost is *never* relevant because it results from a past decision and is already incurred.

5. Avoidable expenses are ones a company will not incur by eliminating a segment; unavoidable expenses will continue even after a segment is eliminated.

6. a



Key Terms

mhhe.com/wildMA2e

Key Terms are available at the book's Website for learning and testing in an online Flashcard Format.

Avoidable expense (p. 371)

Markup (p. 372)

Unavoidable expense (p. 371)

Incremental cost (p. 366)

Relevant benefits (p. 365)

total cost method (p. 372)



Multiple Choice Quiz

Answers on p. 389

mhhe.com/wildMA2e

Additional Quiz Questions are available at the book's Website.



Quiz10

1. A company inadvertently produced 3,000 defective MP3 players. The players cost \$12 each to produce. A recycler offers to purchase the defective players as they are for \$8 each. The production manager reports that the defects can be corrected for \$10 each, enabling them to be sold at their regular market price of \$19 each. The company should:

- a. Correct the defect and sell them at the regular price.
- b. Sell the players to the recycler for \$8 each.
- c. Sell 2,000 to the recycler and repair the rest.
- d. Sell 1,000 to the recycler and repair the rest.
- e. Throw the players away.

2. A company's productive capacity is limited to 480,000 machine hours. Product X requires 10 machine hours to produce; and Product Y requires 2 machine hours to produce. Product X sells for \$32 per unit and has variable costs of \$12 per unit; Product Y sells for \$24 per unit and has variable costs of \$10 per unit. Assuming that the company can sell as many of either product as it produces, it should:

- a. Produce X and Y in the ratio of 57% and 43%.
- b. Produce X and Y in the ratio of 83% X and 17% Y.
- c. Produce equal amounts of Product X and Product Y.
- d. Produce only Product X.
- e. Produce only Product Y.

3. A company receives a special one-time order for 3,000 units of its product at \$15 per unit. The company has excess capacity and it currently produces and sells the units at \$20 each to its

regular customers. Production costs are \$13.50 per unit, which includes \$9 of variable costs. To produce the special order, the company must incur additional fixed costs of \$5,000. Should the company accept the special order?

- a. Yes, because incremental revenue exceeds incremental costs.
- b. No, because incremental costs exceed incremental revenue.
- c. No, because the units are being sold for \$5 less than the regular price.
- d. Yes, because incremental costs exceed incremental revenue.
- e. No, because incremental cost exceeds \$15 per unit when total costs are considered.









4. A cost that cannot be changed because it arises from a past decision and is irrelevant to future decisions is

- a. An uncontrollable cost.
- b. An out-of-pocket cost.
- c. A sunk cost.
- d. An opportunity cost.
- e. An incremental cost.

5. The potential benefit of one alternative that is lost by choosing another is known as

- a. An alternative cost.
- b. A sunk cost.
- c. A differential cost.
- d. An opportunity cost.
- e. An out-of-pocket cost.

Discussion Questions

1.  Identify the five steps involved in the managerial decision-making process.
2. Is nonfinancial information ever useful in managerial decision making?
3. What is a relevant cost? Identify the two types of relevant costs.
4.  Why are sunk costs irrelevant in deciding whether to sell a product in its present condition or to make it into a new product through additional processing?
5. What is an out-of-pocket cost? Are out-of-pocket costs recorded in the accounting records?
6. What is an opportunity cost? Are opportunity costs recorded in the accounting records?
7.  Identify some qualitative factors that should be considered when making managerial decisions.
8.  Identify the incremental costs incurred by **Best Buy** for shipping one additional iPod from a warehouse to a retail store along with the store's normal order of 75 iPods. 
9. **Circuit City** is considering eliminating one of its stores in a large U.S. city. What are some factors that Circuit City should consider in making this decision? 
10.  Assume that **Apple** manufactures and sells 500,000 units of a product at \$30 per unit in domestic markets. It costs \$20 per unit to manufacture (\$13 variable cost per unit, \$7 fixed cost per unit). Can you describe a situation under which the company is willing to sell an additional 25,000 units of the product in an international market at \$15 per unit? 



Denotes Discussion Questions that involve decision making.

connect Most materials in this section are available in McGraw-Hill's Connect

Helix Company has been approached by a new customer to provide 2,000 units of its regular product at a special price of \$6 per unit. The regular selling price of the product is \$8 per unit. Helix is operating at 75% of its capacity of 10,000 units. Identify whether the following costs are relevant to Helix's decision as to whether to accept the order at the special selling price. No additional fixed manufacturing overhead will be incurred because of this order. The only additional selling expense on this order will be a \$0.50 per unit shipping cost. There will be no additional administrative expenses because of this order. Place an X in the appropriate column to identify whether the cost is relevant or irrelevant to accepting this order.

Item	Relevant	Not relevant
a. Selling price of \$6.00 per unit	_____	_____
b. Direct materials cost of \$1.00 per unit	_____	_____
c. Direct labor of \$2.00 per unit	_____	_____
d. Variable manufacturing overhead of \$1.50 per unit	_____	_____
e. Fixed manufacturing overhead of \$0.75 per unit	_____	_____
f. Regular selling expenses of \$1.25 per unit	_____	_____
g. Additional selling expenses of \$0.50 per unit	_____	_____
h. Administrative expenses of \$0.60 per unit	_____	_____

Refer to the data in QS 10-1. Based on financial considerations alone, should Helix accept this order at the special price? Explain.

QUICK STUDY

QS 10-1
Identification of relevant costs
P1

QS 10-2
Analysis of relevant costs
A1

Refer to QS 10-1 and QS 10-2. What nonfinancial factors should Helix consider before accepting this order? Explain.

QS 10-3
Identification of relevant nonfinancial factors
C1 A1

QS 10-4

Sell or process

CI AI

Marathon Company has 10,000 units of its product that were produced last year at a total cost of \$150,000. The units were damaged in a rain storm because the warehouse where they were stored developed a leak in the roof. Marathon can sell the units as is for \$2 each or it can repair the units at a total cost of \$18,000 and then sell them for \$5 each. Should Marathon sell the units as is or repair them and then sell them? Explain.

QS 10-5

Selection of sales mix

CI AI 


Flash Memory Company can sell all units of computer memory X and Y that it can produce, but it has limited production capacity. It can produce four units of X per hour *or* six units of Y per hour, and it has 16,000 production hours available. Contribution margin is \$10 for Product X and \$8 for Product Y. What is the most profitable sales mix for this company?

QS 10-6

Analysis of incremental costs

CI AI 

Falcon Company incurs a \$18 per unit cost for Product A, which it currently manufactures and sells for \$27 per unit. Instead of manufacturing and selling this product, the company can purchase Product B for \$10 per unit and sell it for \$24 per unit. If it does so, unit sales would remain unchanged and \$10 of the \$18 per unit costs assigned to Product A would be eliminated. Should the company continue to manufacture Product A or purchase Product B for resale?

Most materials in this section are available in McGraw-Hill's Connect 

EXERCISES

Harlan Co. expects to sell 300,000 units of its product in the next period with the following results.

Exercise 10-1

Decision to accept additional business or not

CI AI 

Sales (300,000 units)	\$4,500,000
Costs and expenses	
Direct materials	600,000
Direct labor	1,200,000
Overhead	300,000
Selling expenses	450,000
Administrative expenses	771,000
Total costs and expenses	<u>3,321,000</u>
Net income	<u>\$1,179,000</u>

The company has an opportunity to sell 30,000 additional units at \$13 per unit. The additional sales would not affect its current expected sales. Direct materials and labor costs per unit would be the same for the additional units as they are for the regular units. However, the additional volume would create the following incremental costs: (1) total overhead would increase by 16% and (2) administrative expenses would increase by \$129,000. Prepare an analysis to determine whether the company should accept or reject the offer to sell additional units at the reduced price of \$13 per unit.

Check Income increase, \$33,000

Exercise 10-2

Decision to accept new business or not

CI AI

Goshford Company produces a single product and has capacity to produce 100,000 units per month. Costs to produce its current sales of 80,000 units follow. The regular selling price of the product is \$100 per unit. Management is approached by a new customer who wants to purchase 20,000 units of the product for \$75. If the order is accepted, there will be no additional fixed manufacturing overhead, and no additional fixed selling and administrative expenses. The customer is not in the company's regular selling territory, so there will be a \$5 per unit shipping expense in addition to the regular variable selling and administrative expenses.

	Per Unit	Costs at 80,000 Units
Direct materials	\$12.50	\$1,000,000
Direct labor	15.00	1,200,000
Variable manufacturing overhead	10.00	800,000
Fixed manufacturing overhead	17.50	1,400,000
Variable selling and administrative expenses	14.00	1,120,000
Fixed selling and administrative expenses	13.00	1,040,000
Totals	<u>\$82.00</u>	<u>\$6,560,000</u>

Required

- Determine whether management should accept or reject the new business.
- What nonfinancial factors should management consider when deciding whether to take this order?

Check (1) Additional volume effect on net income, \$370,000

Simons Company currently manufactures one of its crucial parts at a cost of \$2.72 per unit. This cost is based on a normal production rate of 40,000 units per year. Variable costs are \$1.20 per unit, fixed costs related to making this part are \$40,000 per year, and allocated fixed costs are \$50,000 per year. Allocated fixed costs are unavoidable whether the company makes or buys the part. Simons is considering buying the part from a supplier for a quoted price of \$2.16 per unit guaranteed for a three-year period. Should the company continue to manufacture the part, or should it buy the part from the outside supplier? Support your answer with analyses.

Exercise 10-3
Make or buy decision

CI AI 

Check \$1,600 increased costs to make

Gelb Company currently manufactures 40,000 units of a key component for its manufacturing process at a cost of \$4.45 per unit. Variable costs are \$1.95 per unit, fixed costs related to making this component are \$65,000 per year, and allocated fixed costs are \$58,500 per year. The allocated fixed costs are unavoidable whether the company makes or buys this component. The company is considering buying this component from a supplier for \$3.50 per unit. Should it continue to manufacture the component, or should it buy this component from the outside supplier? Support your decision with analysis of the data provided.

Exercise 10-4
Make or buy decision CI AI

Check Increased cost to make, \$3,000

Starr Company has already manufactured 50,000 units of Product A at a cost of \$50 per unit. The 50,000 units can be sold at this stage for \$1,250,000. Alternatively, it can be further processed at a \$750,000 total additional cost and be converted into 10,000 units of Product B and 20,000 units of Product C. Per unit selling price for Product B is \$75 and for Product C is \$50. Prepare an analysis that shows whether the 50,000 units of Product A should be processed further or not.

Exercise 10-5
Sell or process decision

CI AI 

Varto Company has 7,000 units of its sole product in inventory that it produced last year at a cost of \$22 each. This year's model is superior to last year's and the 7,000 units cannot be sold at last year's regular selling price of \$35 each. Varto has two alternatives for these items: (1) they can be sold to a wholesaler for \$8 each, or (2) they can be reworked at a cost of \$125,000 and then sold for \$25 each. Prepare an analysis to determine whether Varto should sell the products as is or rework them and then sell them.

Exercise 10-6
Sell or rework decision

CI AI **Check** Incremental net income of reworking, \$(6,000)

Johns Co. expects its five departments to yield the following income for next year.

	Dept. M	Dept. N	Dept. O	Dept. P	Dept. T
1 Sales	\$34,000	\$23,500	\$33,000	\$27,500	\$ 10,500
2 Expenses					
3 Avoidable	4,700	18,900	15,800	8,000	14,900
4 Unavoidable	20,000	5,100	2,900	15,000	5,900
5 Total expenses	24,700	24,000	18,700	23,000	20,800
6 Net income (loss)	\$ 9,300	\$ (500)	\$14,300	\$ 4,500	\$(10,300)

Exercise 10-7
Analysis of income effects from eliminating departments

CI AI 

Recompute and prepare the departmental income statements (including a combined total column) for the company under each of the following separate scenarios: Management (1) does not eliminate any department, (2) eliminates departments with expected net losses, and (3) eliminates departments with sales dollars that are less than avoidable expenses. Explain your answers to parts 2 and 3.

Check Total income (2) \$17,100, (3) \$21,700

Exercise 10-8

Income analysis of eliminating departments

CI AI

Marinette Company makes several products, including canoes. The company has been experiencing losses from its canoe segment and is considering dropping that product line. The following information is available regarding its canoe segment. Should management discontinue the manufacturing of canoes? Support your decision.

MARINETTE COMPANY Income Statement—Canoe Segment		
Sales		\$2,000,000
Variable costs		
Direct materials	\$450,000	
Direct labor	500,000	
Variable overhead	300,000	
Variable selling and administrative	200,000	
Total variable costs		1,450,000
Contribution margin		550,000
Fixed costs		
Direct	375,000	
Indirect	300,000	
Total fixed costs		675,000
Net income		<u>\$ (125,000)</u>

Check Income impact if canoe segment dropped, \$(175,000)

Exercise 10-9

Sales mix determination and analysis

CI AI

Jersey Company owns a machine that can produce two specialized products. Production time for Product TLX is two units per hour and for Product MTV is five units per hour. The machine's capacity is 2,200 hours per year. Both products are sold to a single customer who has agreed to buy all of the company's output up to a maximum of 3,740 units of Product TLX and 2,090 units of Product MTV. Selling prices and variable costs per unit to produce the products follow. Determine (1) the company's most profitable sales mix and (2) the contribution margin that results from that sales mix.

	Product TLX	Product MTV
Selling price per unit	\$11.50	\$6.90
Variable costs per unit	3.45	4.14

Check (2) \$34,661

Exercise 10-10


Sales mix

CI AI

Childress Company produces three products, K1, S5, and G9. Each product uses the same type of direct material. K1 uses 4 pounds of the material, S5 uses 3 pounds of the material, and G9 uses 6 pounds of the material. Demand for all products is strong, but only 50,000 pounds of material are available. Information about the selling price per unit and variable cost per unit of each product follows. Orders for which product should be produced and filled first, then second, and then third? Support your answer.

	K1	S5	G9
Selling price	\$160	\$112	\$210
Variable costs	96	85	144

Check K1 contribution margin per pound, \$16

Most materials in this section are available in McGraw-Hill's Connect 

PROBLEM SET A

Ingraham Products manufactures and sells to wholesalers approximately 200,000 packages per year of underwater markers at \$4 per package. Annual costs for the production and sale of this quantity are shown in the table.

Problem 10-1A

Analysis of income effects of additional business

CI AI

Direct materials	\$256,000
Direct labor	64,000
Overhead	192,000
Selling expenses	80,000
Administrative expenses	53,000
Total costs and expenses	<u>\$645,000</u>



A new wholesaler has offered to buy 33,000 packages for \$3.44 each. These markers would be marketed under the wholesaler’s name and would not affect Ingraham Products’ sales through its normal channels. A study of the costs of this additional business reveals the following:

- Direct materials costs are 100% variable.
- Per unit direct labor costs for the additional units would be 50% higher than normal because their production would require overtime pay at one-and-one-half times the usual labor rate.
- 35% of the normal annual overhead costs are fixed at any production level from 150,000 to 300,000 units. The remaining 65% of the annual overhead cost is variable with volume.
- Accepting the new business would involve no additional selling expenses.
- Accepting the new business would increase administrative expenses by a \$5,000 fixed amount.

Required

Prepare a three-column comparative income statement that shows the following:

1. Annual operating income without the special order (column 1).
2. Annual operating income received from the new business only (column 2).
3. Combined annual operating income from normal business and the new business (column 3).

Check Operating income: (1) \$155,000, (2) \$29,848

Calla Company produces skateboards that sell for \$50 per unit. The company currently has the capacity to produce 90,000 skateboards per year, but is selling 80,000 skateboards per year. Annual costs for 80,000 skateboards follow.

Problem 10-2A
Analysis of income effects of additional business

C1 A1

Direct materials	\$ 800,000
Direct labor	640,000
Overhead	960,000
Selling expenses	560,000
Administrative expenses	480,000
Total costs and expenses	<u>\$3,440,000</u>

A new retail store has offered to buy 10,000 of its skateboards for \$45 per unit. The store is in a different market from Calla’s regular customers and it would not affect regular sales. A study of its costs in anticipation of this additional business reveals the following:

- Direct materials and direct labor are 100% variable.
- Thirty percent of overhead is fixed at any production level from 80,000 units to 90,000 units; the remaining 70% of annual overhead costs are variable with respect to volume.
- Selling expenses are 60% variable with respect to number of units sold, and the other 40% of selling expenses are fixed.
- There will be an additional \$2 per unit selling expense for this order.
- Administrative expenses would increase by a \$1,000 fixed amount.

Required

1. Prepare a three-column comparative income statement that reports the following:
 - a. Annual income without the special order.
 - b. Annual income from the special order.
 - c. Combined annual income from normal business and the new business.
2. Should Calla accept this order? What nonfinancial factors should Calla consider? Explain.

Check (1b) Added income from order, \$123,000

Analysis Component

3. Assume that the new customer wants to buy 15,000 units instead of 10,000 units—it will only buy 15,000 units or none and will not take a partial order. Without any computations, how does this change your answer for part 2?

Problem 10-3A

Make or buy

CI AI

Haver Company currently produces component RX5 for its sole product. The equipment that is used to produce RX5 must be replaced, and management must decide whether to replace the equipment or buy RX5 from an outside supplier. The current cost per unit to manufacture the required 50,000 units of RX5 follows.

Direct materials	\$ 5.00
Direct labor	8.00
Overhead	9.00
Total cost per unit	\$22.00

Direct materials and direct labor are 100% variable. Overhead is 80% fixed, and the current fixed overhead includes \$0.50 per unit depreciation on the old equipment. If management buys the new equipment, it will incur depreciation of \$1.12 per unit. An outside supplier has offered to supply the 50,000 units of RX5 for \$18.00 per unit.

Required

- Determine whether the company should make or buy the RX5.
- What factors beside cost must management consider when deciding whether to make or buy RX5?

Check (1) Incremental cost to make RX5, \$771,000

Problem 10-4A

Sell or process

CI AI

Harold Manufacturing produces denim clothing. This year, it produced 5,000 denim jackets at a manufacturing cost of \$45 each. These jackets were damaged in the warehouse during storage. Management investigated the matter and identified three alternatives for these jackets.

- Jackets can be sold to a second-hand clothing shop for \$6 each.
- Jackets can be disassembled at a cost of \$32,000 and sold to a recycler for \$12 each.
- Jackets can be reworked and turned into good jackets. However, with the damage, management estimates it will be able to assemble the good parts of the 5,000 jackets into only 3,000 jackets. The remaining pieces of fabric will be discarded. The cost of reworking the jackets will be \$102,000, but the jackets can then be sold for their regular price of \$45 each.

Required

Which alternative should Harold choose? Show analysis for each alternative.

Check Incremental income for alternative 2, \$28,000

Problem 10-5A

Analysis of sales mix strategies

CI AI 

Virginia Company is able to produce two products, G and B, with the same machine in its factory. The following information is available.

	Product G	Product B
Selling price per unit	\$280	\$240
Variable costs per unit	130	60
Contribution margin per unit	\$150	\$180
Machine hours to produce 1 unit	0.2 hours	2.0 hours
Maximum unit sales per month	1,200 units	200 units

The company presently operates the machine for a single eight-hour shift for 22 working days each month. Management is thinking about operating the machine for two shifts, which will increase its productivity by another eight hours per day for 22 days per month. This change would require \$63,000 additional fixed costs per month.

Required

- Determine the contribution margin per machine hour that each product generates.
- How many units of Product G and Product B should the company produce if it continues to operate with only one shift? How much total contribution margin does this mix produce each month?
- If the company adds another shift, how many units of Product G and Product B should it produce? How much total contribution margin would this mix produce each month? Should the company add the new shift? Explain.
- Suppose that the company determines that it can increase Product G's maximum sales to 1,400 units per month by spending \$24,000 per month in marketing efforts. Should the company pursue this strategy and the double shift? Explain.

Check Units of Product G: (2) 880, (3) 1,200, (4) 1,400

Eclectic Decor Company's management is trying to decide whether to eliminate Department 200, which has produced losses or low profits for several years. The company's 2009 departmental income statement shows the following.

ECLECTIC DECOR COMPANY			
Departmental Income Statements			
For Year Ended December 31, 2009			
	Dept. 100	Dept. 200	Combined
Sales	\$437,000	\$280,000	\$717,000
Cost of goods sold	<u>263,000</u>	<u>207,000</u>	<u>470,000</u>
Gross profit	174,000	73,000	247,000
Operating expenses			
Direct expenses			
Advertising	17,500	13,500	31,000
Store supplies used	5,000	4,600	9,600
Depreciation—Store equipment	<u>4,200</u>	<u>3,000</u>	<u>7,200</u>
Total direct expenses	26,700	21,100	47,800
Allocated expenses			
Sales salaries	52,000	31,200	83,200
Rent expense	9,500	4,750	14,250
Bad debts expense	9,500	7,400	16,900
Office salary	15,600	10,400	26,000
Insurance expense	1,900	1,000	2,900
Miscellaneous office expenses	<u>2,500</u>	<u>1,700</u>	<u>4,200</u>
Total allocated expenses	<u>91,000</u>	<u>56,450</u>	<u>147,450</u>
Total expenses	<u>117,700</u>	<u>77,550</u>	<u>195,250</u>
Net income (loss)	<u>\$ 56,300</u>	<u>\$ (4,550)</u>	<u>\$ 51,750</u>

Problem 10-6A

Analysis of possible elimination of a department

C1 A1 

In analyzing whether to eliminate Department 200, management considers the following:

- The company has one office worker who earns \$500 per week, or \$26,000 per year, and four salesclerks who each earn \$400 per week, or \$20,800 per year.
- The full salaries of two salesclerks are charged to Department 100. The full salary of one sales clerk is charged to Department 200. The salary of the fourth clerk, who works half-time in both departments, is divided evenly between the two departments.
- Eliminating Department 200 would avoid the sales salaries and the office salary currently allocated to it. However, management prefers another plan. Two salesclerks have indicated that they will be quitting soon. Management believes that their work can be done by the other two clerks if the one office worker works in sales half-time. Eliminating Department 200 will allow this shift of duties. If this change is implemented, half the office worker's salary would be reported as sales salaries and half would be reported as office salary.
- The store building is rented under a long-term lease that cannot be changed. Therefore, Department 100 will use the space and equipment currently used by Department 200.
- Closing Department 200 will eliminate its expenses for advertising, bad debts, and store supplies; 70% of the insurance expense allocated to it to cover its merchandise inventory; and 25% of the miscellaneous office expenses presently allocated to it.

Required

- Prepare a three-column report that lists items and amounts for (a) the company's total expenses (including cost of goods sold)—in column 1, (b) the expenses that would be eliminated by closing Department 200—in column 2, and (c) the expenses that will continue—in column 3.
- Prepare a forecasted annual income statement for the company reflecting the elimination of Department 200 assuming that it will not affect Department 100's sales and gross profit. The statement should reflect the reassignment of the office worker to one-half time as a salesclerk.

Check (1) Total expenses:
(a) \$665,250, (b) \$275,225

(2) Forecasted net income
without Department 200, \$46,975

Analysis Component

- Reconcile the company's combined net income with the forecasted net income assuming that Department 200 is eliminated (list both items and amounts). Analyze the reconciliation and explain why you think the department should or should not be eliminated.

PROBLEM SET B

Wyn Company manufactures and sells to local wholesalers approximately 150,000 units per month at a sales price of \$4 per unit. Monthly costs for the production and sale of this quantity follow.

Problem 10-1B

Analysis of income effects of additional business

CI A1

Direct materials	\$192,000
Direct labor	48,000
Overhead	144,000
Selling expenses	60,000
Administrative expenses	40,000
Total costs and expenses	<u>\$484,000</u>

A new out-of-state distributor has offered to buy 25,000 units next month for \$3.44 each. These units would be marketed in other states and would not affect Wyn’s sales through its normal channels. A study of the costs of this new business reveals the following:

- Direct materials costs are 100% variable.
- Per unit direct labor costs for the additional units would be 50% higher than normal because their production would require time-and-a-half overtime pay to meet the distributor’s deadline.
- Twenty-five percent of the normal annual overhead costs are fixed at any production level from 125,000 to 200,000 units. The remaining 75% is variable with volume.
- Accepting the new business would involve no additional selling expenses.
- Accepting the new business would increase administrative expenses by a \$2,000 fixed amount.

Required

Prepare a three-column comparative income statement that shows the following:

1. Monthly operating income without the special order (column 1).
2. Monthly operating income received from the new business only (column 2).
3. Combined monthly operating income from normal business and the new business (column 3).

Check Operating income:
(1) \$116,000, (2) \$22,000

Problem 10-2B

Analysis of income effects of additional business

CI A1

Mervin Company produces circuit boards that sell for \$8 per unit. It currently has capacity to produce 600,000 circuit boards per year, but is selling 550,000 boards per year. Annual costs for the 550,000 circuit boards follow.

Direct materials	\$ 825,000
Direct labor	1,100,000
Overhead	1,375,000
Selling expenses	275,000
Administrative expenses	550,000
Total costs and expenses	<u>\$4,125,000</u>

An overseas customer has offered to buy 50,000 circuit boards for \$6 per unit. The customer is in a different market from its regular customers and would not affect regular sales. A study of its costs in anticipation of this additional business reveals the following:

- Direct materials and direct labor are 100% variable.
- Twenty percent of overhead is fixed at any production level from 550,000 units to 600,000 units; the remaining 80% of annual overhead costs are variable with respect to volume.
- Selling expenses are 40% variable with respect to number of units sold, and the other 60% of selling expenses are fixed.
- There will be an additional \$0.20 per unit selling expense for this order.
- Administrative expenses would increase by a \$700 fixed amount.

Required

1. Prepare a three-column comparative income statement that reports the following:
 - a. Annual income without the special order.
 - b. Annual income from the special order.
 - c. Combined annual income from normal business and the new business.
2. Should management accept the order? What nonfinancial factors should Mervin consider? Explain.

Check (1b) Additional income from order, \$4,300

Analysis Component

- Assume that the new customer wants to buy 100,000 units instead of 50,000 units—it will only buy 100,000 units or none and will not take a partial order. Without any computations, how does this change your answer in part 2?

Alto Company currently produces component TH1 for its sole product. The equipment that it uses to produce TH1 must be replaced, and management must decide whether to replace the equipment or buy TH1 from an outside supplier. The current cost per unit to manufacture its required 400,000 units of TH1 follows.

Problem 10-3B

Make or buy

CI AI

Direct materials	\$1.20
Direct labor	1.50
Overhead	6.00
Total cost per unit	<u>\$8.70</u>

Direct materials and direct labor are 100% variable. Overhead is 75% fixed, and the current fixed overhead includes \$1 per unit depreciation on the old equipment. If management buys the new equipment, it will incur depreciation of \$1.50 per unit. An outside supplier has offered to supply the 400,000 units of TH1 for \$4 per unit.

Required

- Determine whether management should make or buy the TH1.
- What factors besides cost must management consider when deciding whether to make or buy TH1?

Check (1) Incremental cost to make TH1, \$1,880,000

Micron Manufacturing produces electronic equipment. This year, it produced 7,500 oscilloscopes at a manufacturing cost of \$300 each. These oscilloscopes were damaged in the warehouse during storage and, while usable, cannot be sold at their regular selling price of \$500 each. Management has investigated the matter and has identified three alternatives for these oscilloscopes.

Problem 10-4B

Sell or process

CI AI

- They can be sold to a wholesaler for \$75 each.
- They can be disassembled at a cost of \$400,000 and the parts sold to a recycler for \$130 each.
- They can be reworked and turned into good units. The cost of reworking the units will be \$3,200,000, after which the units can be sold at their regular price of \$500 each.

Required

Which alternative should management pursue? Show analysis for each alternative.

Check Incremental income for alternative 2, \$575,000

Verto Company is able to produce two products, R and T, with the same machine in its factory. The following information is available.

Problem 10-5B

Analysis of sales mix strategies

CI AI



	Product R	Product T
Selling price per unit	\$ 120	\$160
Variable costs per unit	<u>65</u>	<u>90</u>
Contribution margin per unit	<u>\$ 55</u>	<u>\$ 70</u>
Machine hours to produce 1 unit	0.2 hours	0.5 hours
Maximum unit sales per month	1,100 units	350 units

The company presently operates the machine for a single eight-hour shift for 22 working days each month. Management is thinking about operating the machine for two shifts, which will increase its productivity by another eight hours per day for 22 days per month. This change would require \$30,000 additional fixed costs per month.

Required

- Determine the contribution margin per machine hour that each product generates.
- How many units of Product R and Product T should the company produce if it continues to operate with only one shift? How much total contribution margin does this mix produce each month?

Check Units of Product R: (2) 880, (3) 1,100, (4) 1,350

3. If the company adds another shift, how many units of Product R and Product T should it produce? How much total contribution margin would this mix produce each month? Should the company add the new shift? Explain.
4. Suppose that the company determines that it can increase Product R's maximum sales to 1,350 units per month by spending \$9,000 per month in marketing efforts. Should the company pursue this strategy and the double shift? Explain.

Problem 10-6B

Analysis of possible elimination of a department



Kumar Company's management is trying to decide whether to eliminate Department Z, which has produced low profits or losses for several years. The company's 2009 departmental income statement shows the following.

KUMAR COMPANY			
Departmental Income Statements			
For Year Ended December 31, 2009			
	Dept. A	Dept. Z	Combined
Sales	\$1,050,000	\$262,500	\$1,312,500
Cost of goods sold	<u>691,950</u>	<u>187,650</u>	<u>879,600</u>
Gross profit	358,050	74,850	432,900
Operating expenses			
Direct expenses			
Advertising	40,500	4,500	45,000
Store supplies used	8,400	2,100	10,500
Depreciation—Store equipment	<u>21,000</u>	<u>10,500</u>	<u>31,500</u>
Total direct expenses	69,900	17,100	87,000
Allocated expenses			
Sales salaries	105,300	35,100	140,400
Rent expense	33,120	8,280	41,400
Bad debts expense	31,500	6,000	37,500
Office salary	31,200	7,800	39,000
Insurance expense	6,300	2,100	8,400
Miscellaneous office expenses	<u>2,550</u>	<u>3,750</u>	<u>6,300</u>
Total allocated expenses	<u>209,970</u>	<u>63,030</u>	<u>273,000</u>
Total expenses	<u>279,870</u>	<u>80,130</u>	<u>360,000</u>
Net income (loss)	<u>\$ 78,180</u>	<u>\$ (5,280)</u>	<u>\$ 72,900</u>

In analyzing whether to eliminate Department Z, management considers the following items:

- a. The company has one office worker who earns \$750 per week or \$39,000 per year and four salesclerks who each earn \$675 per week or \$35,100 per year.
- b. The full salaries of three salesclerks are charged to Department A. The full salary of one salesclerk is charged to Department Z.
- c. Eliminating Department Z would avoid the sales salaries and the office salary currently allocated to it. However, management prefers another plan. Two salesclerks have indicated that they will be quitting soon. Management believes that their work can be done by the two remaining clerks if the one office worker works in sales half time. Eliminating Department Z will allow this shift of duties. If this change is implemented, half the office worker's salary would be reported as sales salaries and half would be reported as office salary.
- d. The store building is rented under a long-term lease that cannot be changed. Therefore, Department A will use the space and equipment currently used by Department Z.
- e. Closing Department Z will eliminate its expenses for advertising, bad debts, and store supplies; 65% of the insurance expense allocated to it to cover its merchandise inventory; and 30% of the miscellaneous office expenses presently allocated to it.

Required

1. Prepare a three-column report that lists items and amounts for (a) the company's total expenses (including cost of goods sold)—in column 1, (b) the expenses that would be eliminated by closing Department Z—in column 2, and (c) the expenses that will continue—in column 3.
2. Prepare a forecasted annual income statement for the company reflecting the elimination of Department Z assuming that it will not affect Department A's sales and gross profit. The statement should reflect the reassignment of the office worker to one-half time as a salesclerk.

Check (1) Total expenses:
(a) \$1,239,600, (b) \$272,940

(2) Forecasted net income
without Department Z, \$83,340

Analysis Component

3. Reconcile the company's combined net income with the forecasted net income assuming that Department Z is eliminated (list both items and amounts). Analyze the reconciliation and explain why you think the department should or should not be eliminated.

(This serial problem began in Chapter 1 and continues through most of the book. If previous chapter segments were not completed, the serial problem can begin at this point. It is helpful, but not necessary, to use the Working Papers that accompany the book.)

SERIAL PROBLEM

Success Systems

SP 10 Adriana Lopez has found that her line of computer desks and chairs has become very popular and she is finding it hard to keep up with demand. She knows that she cannot fill all of her orders for both items, so she decides she must determine the optimal sales mix given the resources she has available. Information about the desks and chairs follows.

	Desks	Chairs
Selling price per unit	\$1,125	\$375
Variable costs per unit	500	200
Contribution margin per unit	<u>\$ 625</u>	<u>\$175</u>
Direct labor hours per unit	5 hours	4 hours
Expected demand for next quarter	175 desks	50 chairs

Adriana has determined that she only has 1,015 direct labor hours available for the next quarter and wants to optimize her contribution margin given the limited number of direct labor hours available.

Required

Determine the optimal sales mix for Adriana and the contribution margin she will earn at that sales mix.

BEYOND THE NUMBERS

BTN 10-1 During a recent fiscal year, **Best Buy** (BestBuy.com) sold off its interest in **Musicland**. Information about operations for Best Buy and Musicland for the fiscal year before the sale of Musicland follows.

REPORTING IN ACTION

CI A1 P1 



\$ millions	Best Buy*	Musicland	Total
Revenues	\$20,943	\$1,727	\$22,670
Operating expenses†	20,321	1,971	22,292

* Does not include Musicland results.
† Includes cost of goods sold.

Required

1. Compute operating income for Best Buy and Musicland, separately, and the total operating income for both.
2. If the results in part 1 for Musicland are typical, why do you believe Best Buy decided to sell off its interest in Musicland?

COMPARATIVE ANALYSIS

CI 



BTN 10-2 Best Buy, Circuit City, and RadioShack sell several different products; most are profitable but some are not. Teams of employees in each company make advertising, investment, and product mix decisions. A certain portion of advertising for both companies is on a local basis to a target audience.

Required

1. Find one major advertisement of a product or group of products for each company in your local newspaper. Contact the newspaper and ask the approximate cost of this ad space (for example, cost of one page or one-half page of advertising).
2. Estimate how many products this advertisement must sell to justify its cost. Begin by taking the product's sales price advertised for each company and assume a 20% contribution margin.
3. Prepare a one-half page memorandum explaining the importance of effective advertising when making a product mix decision. Be prepared to present your ideas in class.

ETHICS CHALLENGE

P1 

BTN 10-3 Bert Asiago, a salesperson for Convertco, received an order from a potential new customer for 50,000 units of Convertco's single product at a price \$25 below its regular selling price of \$65. Asiago knows that Convertco has the capacity to produce this order without affecting regular sales. He has spoken to Convertco's controller, Bia Morgan, who has informed Asiago that at the \$40 selling price, Convertco will not be covering its variable costs of \$42 for the product, and she recommends the order not be accepted. Asiago knows that variable costs include his sales commission of \$4 per unit. If he accepts a \$2 per unit commission, the sale will produce a contribution margin of zero. Asiago is eager to get the new customer because he believes that this could lead to the new customer becoming a regular customer.

Required

1. Determine the contribution margin per unit on the order as determined by the controller.
2. Determine the contribution margin per unit on the order as determined by Asiago if he takes the lower commission.
3. Do you recommend Convertco accept the special order? What factors must management consider?

COMMUNICATING IN PRACTICE

P1

BTN 10-4 Assume that you work for Greeble's Department Store, and your manager requests that you outline the pros and cons of discontinuing its hardware department. That department appears to be generating losses, and your manager believes that discontinuing it will increase overall store profits.

Required

Prepare a memorandum to your manager outlining what Greeble's management should consider when trying to decide whether to discontinue its hardware department.

TAKING IT TO THE NET

AI  

BTN 10-5 Many companies must determine whether to internally produce their component parts or to outsource them. Further, some companies now outsource key components or business processes to international providers. Access the Website BizBrim.com and review the available information on outsourcing—especially as it relates to both the advantages and the negative effects of outsourcing.

Required

1. What does Bizbrim identify as the major advantages and the major disadvantages of outsourcing?
2. Does it seem that Bizbrim is generally in favor of or opposed to outsourcing? Explain.

TEAMWORK IN ACTION

P1 

BTN 10-6 Break into teams and identify costs that an airline such as Northwest would incur on a flight from Green Bay to Minneapolis. (1) Identify the individual costs as variable or fixed. (2) Assume that Northwest is trying to decide whether to drop this flight because it seems to be unprofitable. Determine which costs are likely to be saved if the flight is dropped. Set up your answer in the following format.

Cost	Variable or Fixed	Cost Saved if Flight Is Dropped	Rationale

BTN 10-7 Jared Greenberg and Dan Zinger of **Prairie Sticks Bat Company** make baseball bats. They must decide on the best sales mix. Assume their company has a capacity of 80 hours of lathe/processing time available each month and it makes two types of bats, Deluxe and Premium. Information on these bats follows.

ENTREPRENEURIAL DECISION



	Deluxe	Premium
Selling price per bat	\$70	\$90
Variable costs per bat	\$40	\$50
Lathe/processing minutes per bat	6 minutes	12 minutes

Required

1. Assume the markets for both models of bats are unlimited. How many Deluxe bats and how many Premium bats should the company make each month? Explain. How much total contribution margin does this mix produce each month?
2. Assume the market for Deluxe bats is limited to 600 bats per month, with no market limit for Premium bats. How many Deluxe bats and how many Premium bats should the company make each month? Explain. How much total contribution margin does this mix produce each month?

BTN 10-8 Restaurants are often adding and removing menu items. Visit a restaurant and identify a new food item. Make a list of costs that the restaurant must consider when deciding whether to add that new item. Also, make a list of nonfinancial factors that the restaurant must consider when adding that item.

HITTING THE ROAD



BTN 10-9 Access **DSG's** 2006 annual report dated April 29, 2006, from its Website www.DSGiplc.com. Identify its report on corporate responsibility.

GLOBAL DECISION



Required

DSG reports that it recycled 25,607 tons of waste. Efforts such as these can be costly to a company. Why would a company such as DSG pursue these costly efforts?

ANSWERS TO MULTIPLE CHOICE QUIZ

1. a; Reworking provides incremental revenue of \$11 per unit ($\$19 - \8); and, it costs \$10 to rework them. The company is better off by \$1 per unit when it reworks these products and sells them at the regular price.
2. e; Product X has a \$2 contribution margin per machine hour [$(\$32 - \$12)/10$ MH]; Product Y has a \$7 contribution margin per machine hour [$(\$24 - \$10)/2$ MH]. It should produce as much of Product Y as possible.
3. a; Total revenue from the special order = 3,000 units \times \$15 per unit = \$45,000; and, Total costs for the special order = (3,000 units \times \$9 per unit) + \$5,000 = \$32,000. Net income from the special order = \$45,000 - \$32,000 = \$13,000. Thus, yes, it should accept the order.
4. c
5. d