CHAPTER 6
MASTER BUDGET AND RESPONSIBILITY ACCOUNTING

6-1 The budgeting cycle includes the following elements:

a. Planning the performance of the company as a whole as well as planning the performance of its subunits. Management agrees on what is expected.
b. Providing a frame of reference, a set of specific expectations against which actual results can be compared.
c. Investigating variations from plans. If necessary, corrective action follows investigation.
d. Planning again, in light of feedback and changed conditions.

6-2 The *master budget* expresses management's operating and financial plans for a specified period (usually a fiscal year) and includes a set of budgeted financial statements. It is the initial plan of what the company intends to accomplish in the period.

6-3 Strategy, plans, and budgets are interrelated and affect one another. Strategy specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives. Strategic analysis underlies both long-run and short-run planning. In turn, these plans lead to the formulation of budgets. Budgets provide feedback to managers about the likely effects of their strategic plans. Managers use this feedback to revise their strategic plans.

6-4 We agree that budgeted performance is a better criterion than past performance for judging managers because inefficiencies included in past results can be detected and eliminated in budgeting. Also, future conditions may be expected to differ from the past, and these can also be factored into budgets.

6-5 Production and marketing traditionally have operated as relatively independent business functions. Budgets can assist in reducing conflicts between these two functions in two ways. Consider a beverage company such as Coca-Cola or Pepsi-Cola:

- Communication. Marketing could share information about seasonal demand with production.
- Coordination. Production could ensure that output is sufficient to meet, for example, high seasonal demand in the summer.

6-6 In many organizations, budgets impel managers to plan. Without budgets, managers drift from crisis to crisis. Research also shows that budgets can motivate managers to meet targets and improve their performance. Thus, many top managers believe that budgets meet the cost-benefit test.

6-7 A *rolling budget,* also called a *continuous budget,* is a budget or plan that is always available for a specified future period, by continually adding a period (month, quarter, or year) to the period that just ended. A four-quarter rolling budget for 2014 is superseded by a four-quarter rolling budget for April 2014 to March 2015, and so on.

6-8 The steps in preparing an operating budget are as follows:

1. Prepare the revenues budget.
2. Prepare the production budget (in units).
3. Prepare the direct material usage budget and direct material purchases budget.
4. Prepare the direct manufacturing labor budget.
5. Prepare the manufacturing overhead budget.
6. Prepare the ending inventories budget.
7. Prepare the cost of goods sold budget.
8. Prepare the nonmanufacturing costs budget.
9. Prepare the budgeted income statement.

6-9 The sales forecast is typically the cornerstone for budgeting because production (and, hence, costs) and inventory levels generally depend on the forecasted level of sales.

6-10 Sensitivity analysis adds an extra dimension to budgeting. It enables managers to examine how budgeted amounts change with a change in the underlying assumptions. This assists managers in monitoring those assumptions that are most critical to a company in attaining its budget and allows them to make timely adjustments to plans when appropriate.

6-11 *Kaizen budgeting* explicitly incorporates continuous improvement anticipated during the budget period into the budget numbers.

6-12 Nonoutput-based cost drivers can be incorporated into budgeting by the use of activity-based budgeting (ABB). ABB focuses on the budgeted cost of activities necessary to produce and sell products and services. Nonoutput-based cost drivers, such as the number of parts, number of batches, and number of new products can be used with ABB.

6-13 The choice of the type of responsibility center determines what the manager is accountable for and thereby affects the manager's behavior. For example, if a revenue center is chosen, the manager will focus on revenues, not on costs or investments. The choice of a responsibility center type guides the variables to be included in the budgeting exercise.

6-14 Budgeting in multinational companies may involve budgeting in several different foreign currencies. Further, management accountants must translate operating performance into a single currency for reporting to shareholders by budgeting for exchange rates. Managers and accountants must understand the factors that impact exchange rates and, where possible, plan financial strategies to limit the downside of unexpected unfavorable moves in currency valuations. In developing budgets for operations in different countries, they must also have good understanding of political, legal, and economic issues in those countries.

6-15 No. Cash budgets and operating income budgets must be prepared simultaneously. In preparing their operating income budgets, companies want to avoid unnecessary idle cash and unexpected cash deficiencies. The cash budget, unlike the operating income budget, highlights periods of idle cash and periods of cash shortage, and it allows the accountant to plan cost effective ways of either using excess cash or raising cash from outside to achieve the company's operating income goals.

6-16 (15 min.) **Sales budget, service setting.**

1.

Rouse & Sons	2014 Volume	At 2014 Selling Prices	Expected 2015 Change in Volume	Expected 2015 Volume
Radon Tests	12,200	$290	+ 6%	12,932
Lead Tests	16,400	$240	–10%	14,760

Rouse & Sons Sales Budget
For the Year Ended December 31, 2015

	Selling Price	Units Sold	Total Revenues
Radon Tests	$290	12,932	$3,750,280
Lead Tests	$240	14,760	3,542,400
			$7,292,680

2.

Rouse & Sons	2014 Volume	Planned 2015 Selling Prices	Expected 2015 Change in Volume	Expected 2015 Volume
Radon Tests	12,200	$290	+6%	12,932
Lead Tests	16,400	$230	–7%	15,252

Rouse & Sons Sales Budget
For the Year Ended December 31, 2015

	Selling Price	Units Sold	Total Revenues
Radon Tests	$290	12,932	$3,750,280
Lead Tests	$230	15,252	3,507,960
			$7,258,240

Expected revenues at the new 2015 prices are $7,258,240, which is lower than the expected 2015 revenues of $7,292,680 if the prices are unchanged. So, if the goal is to maximize sales revenue and if Jim Rouse's forecasts are reliable, the company should not lower its price for a lead test in 2015.

6-17 (5 min.) **Sales and production budget.**

Budgeted sales in units	208,000
Add target ending finished goods inventory	27,000
Total requirements	235,000
Deduct beginning finished goods inventory	18,000
Units to be produced	217,000

6-18 (5 min.) **Direct materials purchases budget.**

Direct materials to be used in production (bottles)	2,500,000
Add target ending direct materials inventory (bottles)	80,000
Total requirements (bottles)	2,580,000
Deduct beginning direct materials inventory (bottles)	50,000
Direct materials to be purchased (bottles)	2,530,000

6-19 (10 min.) **Budgeting material purchases.**

Production Budget:

	Finished Goods (units)
Budgeted sales	43,000
Add target ending finished goods inventory	19,000
Total requirements	62,000
Deduct beginning finished goods inventory	11,000
Units to be produced	51,000

Direct Materials Purchases Budget:

	Direct Materials (in gallons)
Direct materials needed for production (51,000 × 4)	204,000
Add target ending direct materials inventory	56,000
Total requirements	260,000
Deduct beginning direct materials inventory	66,000
Direct materials to be purchased	194,000

6-20 (15–20 min.) **Revenues, production, and purchases budget.**

1. 915,000 motorcycles × 405,000 yen = 370,575,000,000 yen

2.

Budgeted sales (motorcycles)	915,000
Add target ending finished goods inventory	70,000
Total requirements	985,000
Deduct beginning finished goods inventory	115,000
Units to be produced	870,000

3.

Direct materials to be used in production, 870,000 × 2 (wheels)	1,740,000
Add target ending direct materials inventory	72,000
Total requirements	1,812,000
Deduct beginning direct materials inventory	55,000
Direct materials to be purchased (wheels)	1,757,000
Cost per wheel in yen	× 18,000
Direct materials purchase cost in yen	¥31,626,000,000

4. Note the relatively small inventory of wheels. In Japan, suppliers tend to be located very close to the major manufacturer. Inventories are controlled by just-in-time and similar systems. Indeed, some direct materials inventories are almost nonexistent. Nevertheless, Yoshida's managers would want to check why the target ending inventory of wheels (72,000) is greater than the beginning inventory of 55,000. Could the production process be streamlined and made more efficient to reduce the need to hold more inventories?

   Furthermore, Yoshida could help improve quality, efficiency, and productivity of its wheels supplier to reduce the cost of manufacturing wheels and hence the price the supplier charges Yoshida. Toyota routinely aids its suppliers in this way and also reduces costs through better coordination between suppliers and the company.

6-21 (30 min.) **Revenues and production budget**.

1.

	Selling Price	Units Sold	Total Revenues
12-ounce bottles	$0.20	5,040,000[a]	$1,008,000
1-gallon units	1.50	2,040,000[b]	3,060,000
			$4,068,000

[a] 420,000 × 12 months = 5,040,000
[b] 170,000 × 12 months = 2,040,000

2.

Budgeted unit sales (12-ounce bottles)	5,040,000
Add target ending finished goods inventory	680,000
Total requirements	5,720,000
Deduct beginning finished goods inventory	890,000
Units to be produced	4,830,000

3. Beginning inventory = Budgeted sales + Target ending inventory – Budgeted production
= 2,040,000 + 240,000 – 1,900,000
= 380,000 1-gallon units

6-22 (30 min.) **Budgeting: direct material usage, manufacturing cost, and gross margin**.

1.

Direct Material Usage Budget in Quantity and Dollars

	Material		
	Wool	**Dye**	**Total**
Physical Units Budget			
Direct materials required for			
Blue Rugs (200,000 rugs × 36 skeins and 0.8 gal.)	7,200,000 skeins	160,000 gal.	
Cost Budget			
Available from beginning direct materials inventory:			
(a)			
Wool: 458,000 skeins	$ 961,800		
Dye: 4,000 gallons		$ 23,680	
To be purchased this period: (b)			
Wool: (7,200,000 – 458,000) skeins × $2 per skein	13,484,000		
Dye: (160,000 – 4,000) gal. × $6 per gal.		936,000	
Direct materials to be used this period: (a) + (b)	$14,445,800	$ 959,680	$15,405,480

2.

$$\text{Weaving budgeted overhead rate} = \frac{\$31,620,000}{12,400,000 \text{ DMLH}} = \$2.55 \text{ per DMLH}$$

$$\text{Dyeing budgeted overhead rate} = \frac{\$17,280,000}{1,440,000 \text{ MH}} = \$12 \text{ per MH}$$

3.

Budgeted Unit Cost of Blue Rug

	Cost per Unit of Input	Input per Unit of Output	Total
Wool	$ 2	36 skeins	$ 72.00
Dye	6	0.8 gal.	4.80
Direct manufacturing labor	13	62 hrs.	806.00
Dyeing overhead	12	7.2[1] mach-hrs.	86.40
Weaving overhead	2.55	62 DMLH	158.10
Total			$1,127.30

[1] 0.2 machine hour per skein × 36 skeins per rug = 7.2 machine-hrs. per rug.

4.

Revenue Budget

	Units	Selling Price	Total Revenues
Blue Rugs	200,000	$2,000	$400,000,000
Blue Rugs	185,000	$2,000	$370,000,000

5a.

Sales = 200,000 rugs
Cost of Goods Sold Budget

	From Schedule	Total
Beginning finished goods inventory		$ 0
Direct materials used	$ 15,405,480	
Direct manufacturing labor ($806 × 200,000)	161,200,000	
Dyeing overhead ($86.40 × 200,000)	17,280,000	
Weaving overhead ($158.10 × 200,000)	31,620,000	225,505,480
Cost of goods available for sale		225,505,480
Deduct ending finished goods inventory		0
Cost of goods sold		$225,505,480

5b.

Sales = 185,000 rugs
Cost of Goods Sold Budget

	From Schedule	Total
Beginning finished goods inventory		$ 0
Direct materials used	$ 15,405,480	
Direct manufacturing labor ($806 × 200,000)	161,200,000	
Dyeing overhead ($86.40 × 200,000)	17,280,000	
Weaving overhead ($158.10 × 200,000)	31,620,000	225,505,480
Cost of goods available for sale		225,505,480
Deduct ending finished goods inventory ($1,127.30 × 15,000)		16,909,500
Cost of goods sold		$208,595,980

6.

	200,000 rugs sold	185,000 rugs sold
Revenue	$400,000,000	$370,000,000
Less: Cost of goods sold	225,505,480	208,595,980
Gross margin	$174,494,520	$161,404,020

7. If sales drop to 185,000 blue rugs, Xander should look to reduce fixed costs and produce less to reduce variable costs and inventory costs.

8. Top management can look for ways to increase (stretch) sales and improve quality, efficiency, and input prices to reduce costs in each cost category such as direct materials, direct manufacturing labor, and overhead costs. Top management can also use the budget to coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate managers and employees to achieve "stretch" targets of higher revenues and lower costs.

6-23 (45 min.) **Budgeting: service company**.

1.

Direct Labor Budget in Hours and Dollars

		Total
Hours Budget		
Direct labor hours required (2,000 jobs × 5 hours per job)		10,000 hours
Cost Budget		
Wages (10,000 hours × $12/hr.)	$120,000	
Taxes and benefits (10,000 hours × $12/hr. × 20%)	24,000	
		$144,000
Cost per direct-labor hour ($144,000/10,000 DLH)		$14.40/DLH

2.

$$\text{Travel budgeted overhead rate} = \frac{\$60,000}{25,000 \text{ miles}} = \$2.40 \text{ per mile}$$

$$\text{Window washing budgeted overhead rate} = \frac{\$122,000}{10,000 \text{ DLH}} = \$12.20 \text{ per DLH}$$

3.

Budgeted Cost of Average 2,000 Square-Foot Window Washing Job

Direct labor	$144,000
Travel overhead	60,000
Window washing overhead	122,000
Total Cost per Job	$326,000
Total Cost of 2,000 jobs	$326,000

Budgeted cost of average 2,000 square foot window washing job = $326,000 ÷ 2,000 = $163 per job.

4.

Revenue Budget

Square Feet	Price per Square Foot	Total Revenues
2,000 jobs × 2,000 sq. ft./job = 4,000,000 sq. ft.	$0.10	$400,000

5.

	2,000 jobs
Revenue	$400,000
Expenses	326,000
Operating Income	$ 74,000

6.

Revenue Budget

Square Feet	Price per Square Foot	Total Revenues
2,400 jobs × 2,000 sq. ft./job = 4,800,000 sq. ft.	$0.10	$480,000

	2,400 jobs
Revenue	$480,000
Expenses ($163 × 2,400 jobs) + $15,000	406,200
Operating Income	$ 73,800

Decrease in net operating income: $74,000 – $73,800 = $200. According to this analysis, the increase in revenue would not warrant the $15,000 of additional advertising cost. Therefore, the investment should not be made.

7. Using the budgeted cost per job of $163 ignores the fact that $123,000 of the company's overhead costs are fixed. Because those costs will not increase with an increase in activity from 2,000 to 2,400 jobs, the fixed costs should not be considered in the analysis, and Sunshine's management should examine only incremental costs versus incremental revenues.

Revenues		$480,000
Wages ($14.40 × 12,000)	$172,800	
Supplies ($4.40 × 12,000)	52,800	
Fuel ($0.60 × 30,000)	18,000	
Fixed travel costs	45,000	
Fixed window washing costs	78,000	
Advertising costs	15,000	381,600
Operating income		$ 98,400

Sunshine's operating income increases by $24,400 ($98,400 – $74,000) as a result of advertising, and so Sunshine should incur the $15,000 in additional advertising costs.

8. The following table shows Sunshine's profitability if sales decline to 1,800 jobs.

Revenue (1,800 jobs × 2,000 sq. ft.× 0.10/sq. ft.		$360,000
Wages ($14.40 × 9,000)	$129,600	
Supplies ($4.40 × 9,000)	39,600	
Fuel ($0.60 × 22,500)	13,500	
Fixed travel costs	45,000	
Fixed window washing costs	78,000	305,700
		$ 54,300

If revenue should fall to 1,800 jobs, Sunshine's management should examine the company's fixed overhead costs to determine if any cuts are possible. Variable product costs will naturally decline with a decline in jobs, but fixed costs will not decline without management taking action. While depreciation cost is not likely something that management can reduce, the "other" fixed overhead costs are significant and should be examined.

6-24 (15-25 min.) **Budgets for production and direct manufacturing labor.**

Roletter Company
Budget for Production and Direct Manufacturing Labor
for the Quarter Ended March 31, 2015

	January	February	March	Quarter
Budgeted sales (units)	10,000	14,000	7,000	31,000
Add target ending finished goods inventory[a] (units)	17,500	11,000	12,000	12,000
Total requirements (units)	27,500	25,000	19,000	43,000
Deduct beginning finished goods inventory (units)	17,500	17,500	11,000	17,500
Units to be produced	10,000	7,500	8,000	25,500
Direct manufacturing labor-hours (DMLH) per unit	× 2.0	× 2.0	× 1.5	
Total hours of direct manufacturing labor time needed	20,000	15,000	12,000	47,000
Direct manufacturing labor costs:				
Wages ($12.00 per DMLH)	$240,000	$180,000	$144,000	$564,000
Pension contributions ($0.50 per DMLH)	10,000	7,500	6,000	23,500
Workers' compensation insurance ($0.20 per DMLH)	4,000	3,000	2,400	9,400
Employee medical insurance ($0.30 per DMLH)	6,000	4,500	3,600	14,100
Social Security tax (employer's share) ($12.00 × 0.075 = $0.90 per DMLH)	18,000	13,500	10,800	42,300
Total direct manufacturing labor costs	$278,000	$208,500	$166,800	$653,300

[a] 100% of the first following month's sales plus 50% of the second following month's sales.

Note that the employee Social Security tax of 7.5% is irrelevant. Such taxes are withheld from employees' wages and paid to the government by the employer on behalf of the employees; therefore, the 7.5% amounts are not additional costs to the employer.

2. The budget process would prompt Roletter's management to look for ways to reduce finished goods inventories, the manufacturing labor hours needed to produce each unit both before and after installing new labor-saving machinery; some of the other costs such as Social Security tax and workers' compensation insurance may be fixed by law, while pension contributions and medical insurance might be features that make Roletter an attractive employer.

3. We already see one example of a decision that Roletter's management took based on the budgeted expenses—installing labor-saving machines ahead of wage increases. Roletter's management should also continue to work with employees to increase labor productivity.

6-25 (20–30 min.) **Activity-based budgeting.**

1.

Activity	Cost Hierarchy	Soft Drinks	Fresh Snacks	Packaged Food	Total
Ordering $45 × 14; 24; 14	Batch-level	$ 630	$1,080	$ 630	$ 2,340
Delivery $41 × 12; 62; 19	Batch-level	492	2,542	779	3,813
Shelf-stocking $10.50 × 16; 172; 94	Output-unit-level	168	1,806	987	2,961
Customer support $0.09 × 4,600; 34,200; 10,750	Output-unit-level	414	3,078	968	4,460
Total budgeted indirect costs		$1,704	$8,506	$3,364	$13,574
Percentage of total indirect costs		12.5%	62.7%	24.8%	
Total indirect costs allocated according to COGS (30%; 25%; 45% × 13,574)		$4,072	$3,394	$6,108	

2. Refer to the last row of the table in requirement 1. Fresh snacks, which represents the smallest portion of COGS (25%), is the product category that consumes the largest share (62.7%) of the indirect resources. Fresh snacks demand the highest level of ordering, delivery, shelf-stocking, and customer support resources of all three product categories—it has to be ordered, delivered, and stocked in small, perishable batches, and convenience store customers often require more assistance when purchasing.

3. An ABB approach recognizes how different products require different mixes of support activities. The relative percentage of how each product area uses the cost driver at each activity area is:

Activity	Cost Hierarchy	Soft Drinks	Fresh Snacks	Packaged Food	Total
Ordering	Batch-level	27%	46%	27%	100%
Delivery	Batch-level	13	67	20	100
Shelf-stocking	Output-unit-level	6	61	33	100
Customer support	Output-unit-level	9	69	22	100

By recognizing these differences, Jiffy Mart's managers are better able to budget for different unit sales levels and different mixes of individual product-line items sold. Using a single cost driver (such as COGS) assumes homogeneity in the use of indirect costs (support activities) across product lines which does not occur at Jiffy Mart. If Jiffy Mart had used COGS to allocate costs, Fresh Snacks would have been allocated 25% of the indirect costs, much lower than the 62.7% of the indirect costs based on an analysis of the activities it actually uses. Other benefits cited by managers include: (1) better identification of resource needs, (2) clearer linking of costs with staff responsibilities, and (3) identification of budgetary slack.

6-26 (20–30 min.) **Kaizen approach to activity-based budgeting (continuation of 6-25).**

1.

Activity	Cost Hierarchy	Budgeted Cost-Driver Rates January	February	March
Ordering	Batch-level	$45.00	$44.82000	$44.64072
Delivery	Batch-level	41.00	40.83600	40.67266
Shelf-stocking	Output-unit-level	10.50	10.45800	10.41617
Customer support	Output-unit-level	0.09	0.08964	0.08928

The March 2015 rates can be used to compute the total budgeted cost for each activity area in March 2015:

Activity	Cost Hierarchy	Soft Drinks	Fresh Produce	Packaged Food	Total
Ordering					
$44.64072×14; 24; 14	Batch-level	$ 625	$1,071	$ 625	$ 2,321
Delivery					
$40.67266×12; 62; 19	Batch-level	488	2,522	773	3,783
Shelf-stocking					
$10.41617×16; 172; 94	Output-unit-level	167	1,792	979	2,938
Customer support					
$0.08928×4,600; 34,200; 10,750	Output-unit-level	411	3,053	960	4,424
Total		$1,691	$8,438	$3,337	$13,466

2. A Kaizen budgeting approach signals management's commitment to systematic cost reduction. Compare the budgeted costs from Question 6-25 and 6-26.

	Ordering	Delivery	Shelf-Stocking	Customer Support
Exercise 6-25	$2,340	$3,813	$2,961	$4,460
Exercise 6-26 (Kaizen)	2,321	3,783	2,938	4,424

The Kaizen budget number will show unfavorable variances for managers whose activities do not meet the required monthly cost reductions. This likely will put more pressure on managers to creatively seek out cost reductions by working "smarter" within Jiffy Mart or by having "better" interactions with suppliers or customers.

One limitation of Kaizen budgeting, as illustrated in this question, is that it assumes small incremental improvements each month. It is possible that some cost improvements arise from large discontinuous changes in operating processes, supplier networks, or customer interactions. Companies need to highlight the importance of seeking these large discontinuous improvements as well as the small incremental improvements.

A second limitation is the difficulty and challenge of determining the rate of improvement (0.4% in this example) and whether a constant percentage improvement can be sustained over a period of time.

6-27 (15 min.) **Responsibility and controllability.**

1. (a) Production manager
   (b) Purchasing Manager

The purchasing manager has control of the cost to the extent that he/she is doing the purchasing and can seek or contract for the best price. The production manager should work with the purchasing manager. They can, together, possibly find a combination of better motor and better price for the motor than the production manager has found.

2. (a) Production Manager
   (b) External Forces

In the case of the utility rate hike, the production manager would be responsible for the costs, but they are hard to control. The rates are fixed by the utility company, and there is usually no choice of which utility company is used. The production manager can try to reduce waste (turn off lights when not in use, turn of machines when not running, don't leave water running, etc.) but other than conservation measures, the manager has no say in the utility rates. The manager might consider purchasing more energy-efficient machines.

3. (a) Van 3 driver
   (b) Service manager

The driver of each van has the responsibility to stay within budget for the costs of the service vehicle. The service manager should set policies to which the drivers must adhere, including not using the van for personal use. The service manager could install GPS in the vans to make sure they are where they are supposed to be, and can also fire the driver of Van 3 for misusing company property. (Using the van for personal driving affects the tax deductibility of the van for the firm as well).

4. (a) Tropical's service manager
   (b) Cascades manager

Because Cascades has a maintenance contract with Tropical, both the hotel manager and Tropical's service manager should work together to make sure routine maintenance is scheduled for the hotel's hot tubs. This will decrease the number and cost of the repair emergencies. The manager should also consider the average cost of these service calls over the months where there were no calls.

5. (a) Service manager
   (b) This depends…

The answer to this question really depends on why Fred Friendly works so slowly. If it is because Fred is chatting with the customers (which may be why they like him), then the service manager should tell him to only bill for actual time worked. If it is because Fred works intentionally slowly to get the overtime, then the service manager should consider disciplining him unless he is too valuable in other ways. If it is because he does not have adequate training, then HR should be involved, and the service manager should work with Fred to get him more training and with HR to make sure future hires are adequately trained.

6. (a) Service manager
   (b) External forces

Like the cost of utilities, the cost of gasoline is determined externally. However, unlike the case of utilities, it is possible that the service manager can contract with a gasoline company to buy gas at a fixed price over a period of time. The advantage for Tropical is that the price is set, and the advantage for the gasoline company is that they are certain to have a long-term customer even if the price is lower than for a random customer.

6-28 (15 min.) **Responsibility, controllability, and stretch targets.**

1. The office manager has the responsibility to follow company guidelines and write contracts herself for customers who call her directly. Diverting potential customers to the sales representative costs the company a sales commission that would not have otherwise been paid. If satisfaction surveys are sent to customers asking about their first contact with the company, this may be enough to prevent the office manager from breaking the rules.

2. Each driver is responsible for keeping an accurate accounting of his or her time. Because the drivers are paid for mileage while driving and an hourly rate while in idle, there is an incentive to report less travel time and more idle time. The cost could be controlled by using global positioning systems (GPS) to track the movement and location of the motor coaches.

3. The drivers are responsible for driving the motor coaches at fuel-efficient speeds on the highway. The maintenance technician is responsible for maintaining the vehicles to improve efficiency. An increase in fuel consumption would be difficult to pin on either employee because either could be responsible. Further, there is no incentive for the drivers to drive slower, as they are paid by the mile. Again, global positioning systems (GPS) could be used to track the movement of the vehicles. Some kind of bonus could be offered to the technician for improvements in fuel efficiency.

4. The maintenance technician is clearly responsible for completing all of the preventative maintenance. If he cannot complete the tasks during busy months, the company should consider outsourcing some of the more routine maintenance jobs. Requiring the technician to work significant overtime will likely decrease his efficiency. Ignoring routine maintenance will end up costing the company more money in fuel and repair costs.

5. Haslett has designed the stretch target system correctly. Taking advantage of loss aversion, Haslett has set a stretch target of 50 contracts rewarding the representative with a 12 percent commission (assuming paying this amount of commission is profitable). If the target is not met, the commission decreases to 8 percent. This will motivate the representatives to achieve 50 contracts.

In establishing "stretch targets," Haslett should be sure that there are sufficient potential contracts to allow all three sales representatives to achieve the higher target. Otherwise, the stretch target may cause friction among the representatives. One or more of representatives may decide that the 8 percent commission is not sufficient incentive to stay with the company, and may leave to work for a competitor, resulting in overall reduced sales.

6-29 (30 min.) **Cash flow analysis, sensitivity analysis.**

1. The cash that Game Depot can expect to collect during May and June is calculated below.

Cash collected in	**May**	**June**
From service revenue		
May ($2,800 × 0.97)	$ 2,716	
June ($5,200 × 0.97)		$ 5,044
From sales revenue		
Cash sales		
From credit card sales		
May (0.5 × $12,400 × 0.97)	6,014	
June (0.5 × $19,400 × 0.97)		9,409
From cash sales		
May (0.1 × $12,400)	1,240	
June (0.1 × $19,400)		1,940
Credit sale collections		
From March (0.4 × $9,000 × 0.08)	288	
From April (0.4 × $11,000 × 0.9)	3,960	
(0.4 × $11,000 × 0.08)		352
From May (0.4 × $12,400 × 0.9)		4,464
Total collections	$14,218	$21,209

2. (a) Budgeted expenditures for May are as follows.

	Costs
Inventory purchases	$ 8,700
Rent, utilities, etc.	2,800
Wages	2,000
Total	$13,500

Yes, Game Depot will be able to cover its May costs because receipts are $14,218 and expenditures are only $13,500.

(b)

	Original numbers	**May Revenues decrease 10%**	**May Revenues decrease 5%**	**May Costs increase 8%**
Beginning cash	$ 200.00	$ 200.00	$ 200.00	$ 200.00
Collections	14,218.00	13,221.00[a]	13, 719.50[b]	14,218.00[c]
Cash Costs	13,500.00	13,500.00	13,500.00	14,580.00
Total	$ 918.00	$ (79.00)	$ 419.50	$ (162.00)

[a]From requirement 1, this is 0.90 × ($2,716 + $6,014 + $1,240) + $288 + $3,960 = $13,221

[b]From requirement 1, this is 0.95 × ($2,716 + $6,014 + $1,240) + $288 + $3,960 = $13,719.50

[c]$13,500 × 1.08 = $14,580.

3. Game Depot's managers prepare a cash budget in addition to the operating income budget to plan cash flows to ensure that the company has adequate cash to pay vendors, meet payroll, and pay operating expenses as these payments come due. Game Depot could be very profitable on an accrual accounting basis, but the pattern of cash receipts from revenues might be delayed and result in insufficient cash being available to make scheduled payments for its expenses. Game Depot's managers may then need to initiate a plan to borrow money to finance any shortfall. Building a profitable operating plan does not guarantee that adequate cash will be available, so Game Depot's managers need to prepare a cash budget in addition to an operating income budget.

4. The cost of inventory purchases without the discount is $8,700, which Game Depot would not have to pay until June if it buys the inventory on account in May. However, if it takes the discount and pays in May, the cost will be $8,700 × (100% – 2%) = $8,526. This means it will save $174.

This makes total expenditures for May

	Costs
Inventory purchases	$ 8,526.00
Rent, utilities, etc.	2,800.00
Wages	2,000.00
Total	$13,326.00

Game Depot's total cash available is $200 (cash balance) + $12,400 (cash receipts), so it will have to borrow $726 ($13,326 – $12,600) at a rate of 24 percent (or 2 percent per month.) Based on the information from #1, it will be able to pay this back in June (assuming cash expenditures do not increase dramatically), so it will incur interest costs of $726 × 0.02 = $14.52. Because it will cost them less than $15 to save $174, it makes sense to go ahead and take the short-term loan to pay the account payable early.

Some students might interpret the question to mean that the cost of inventory purchases after taking the 2percent discount in May is $8,700. Under this interpretation, the cost of the inventory is $8,700 ÷ 0.98 = $8,878. If Game Depot takes the discount and pays in May, it will save $8,878 – $8,700 = $178

Total expenditures in May:

Inventory purchases	$8,700
Rent, utilities, etc.	2,800
Wages	2,000
Total	$13,500

Total cash available is $200 + $12,400 = $12,600, so Game Depot will borrow $900 ($13,500 – $12,600) at a rate of 24 percent (or 2 percent per month). The company can repay in June, so interest cost = $900 × 0.02 = $18. It will cost $18 to save $178, so Game Depot should take the short-term loan to pay the accounts payable early.

6-30 (40 min.) **Budget schedules for a manufacturer.**

1a. Revenues Budget

	Knights Blankets	Raiders Blankets	Total
Units sold	130	190	
Selling price	$ 229	$ 296	
Budgeted revenues	$29,770	$56,240	$86,010

b. Production Budget in Units

	Knights Blankets	Raiders Blankets
Budgeted unit sales	130	190
Add budgeted ending fin. goods inventory	22	27
Total requirements	152	217
Deduct beginning fin. goods inventory	12	17
Budgeted production	140	200

c. Direct Materials Usage Budget (units)

	Red wool	Black wool	Knights logo patches	Raiders logo patches	Total
Knights blankets:					
1. Budgeted input per f.g. unit	4	–	1	–	
2. Budgeted production	140	–	140	–	
3. Budgeted usage (1 × 2)	560	–	140	–	
Raiders blankets:					
4. Budgeted input per f.g. unit	–	5	–	1	
5. Budgeted production	–	200	–	200	
6. Budgeted usage (4 × 5)	–	1,000	–	200	
7. Total direct materials usage (3 + 6)	560	1,000	140	200	
Direct Materials Cost Budget					
8. Beginning inventory	35	15	45	60	
9. Unit price (FIFO)	$ 9	$ 12	$ 7	$ 6	
10. Cost of DM used from beginning inventory (8 × 9)	$ 315	$ 180	$315	$ 360	$ 1,170
11. Materials to be used from purchases (7 – 8)	525	985	95	140	
12. Cost of DM in March	$ 10	$ 11	$ 7	$ 8	
13. Cost of DM purchased and used in March (11 × 12)	$5,250	$10,835	$665	$1,120	$17,870
14. Direct materials to be used (10 + 13)	$5,565	$11,015	$980	$1,480	$19,040

Direct Materials Purchases Budget

	Red wool	Black wool	Knights logos	Raiders logos	Total
Budgeted usage (from line 7)	560	1,000	140	200	
Add target ending inventory	25	25	25	25	
Total requirements	585	1,025	165	225	
Deduct beginning inventory	35	15	45	60	
Total DM purchases	550	1,010	120	165	
Purchase price (March)	$ 10	$ 11	$ 7	$ 8	
Total purchases	$5,500	$11,110	$840	$1,320	$18,770

d. Direct Manufacturing Labor Budget

	Budgeted Units Produced	Direct Manuf. Labor-Hours per Output Unit	Total Hours	Hourly Rate	Total
Knights blankets	140	3	420	$27	$11,340
Raiders blankets	200	4	800	$27	21,600
			1,220		$32,940

e. Manufacturing Overhead Budget

Variable manufacturing overhead costs (1,220 × $16)	$19,520
Fixed manufacturing overhead costs	14,640
Total manufacturing overhead costs	$34,160

Total manuf. overhead cost per hour = $34,160 ÷ 1,220 = $28 per direct manufacturing labor-hour
Fixed manuf. overhead cost per hour = $ 14,640 ÷ 1,220 = $12 per direct manufacturing labor-hour

f. Computation of unit costs of ending inventory of finished goods

	Knights Blankets	Raiders Blankets
Direct materials		
Red wool ($10 × 4, 0)	$ 40	$ 0
Black wool ($11 × 0, 5)	0	55
Knights logos ($7 × 1, 0)	7	0
Raiders logos ($8 × 0, 1)	0	8
Direct manufacturing labor ($27 × 3, 4)	81	108
Manufacturing overhead		
Variable ($16 × 3, 4)	48	64
Fixed ($12 × 3, 4)	36	48
Total manufacturing cost	$212	$283

Ending Inventories Budget

	Cost per Unit	Units	Total
Direct Materials			
Red wool	$ 10	25	$ 250
Black wool	11	25	275
Knights logo patches	7	25	175
Raiders logo patches	8	25	200
			900
Finished Goods			
Knights blankets	212	22	4,664
Raiders blankets	283	27	7,641
			12,305
Total			$13,205

g. Cost of goods sold budget

Beginning fin. goods inventory, March 1, 2014 ($1,440 + $2,550)		$ 3,990
Direct materials used (from Dir. materials cost budget)	$19,040	
Direct manufacturing labor (Dir. manuf. labor budget)	32,940	
Manufacturing overhead (Manuf. overhead budget)	34,160	
Cost of goods manufactured		86,140
Cost of goods available for sale		90,130
Deduct ending fin. goods inventory, March 31, 2014 (Inventories budget)		12,305
Cost of goods sold		$77,825

2. Areas where continuous improvement might be incorporated into the budgeting process:
   (a) Direct materials. Either an improvement in usage or price could be budgeted. For example, the budgeted usage amounts for the fabric could be related to the maximum improvement (current usage – minimum possible usage) of yards of fabric for either blanket. It may also be feasible to decrease the price paid, particularly with quantity discounts on things like the logo patches.
   (b) Direct manufacturing labor. The budgeted usage of 3 hours/4 hours could be continuously revised on a monthly basis. Similarly, the manufacturing labor cost per hour of $27 could be continuously revised down. The former appears more feasible than the latter.
   (c) Variable manufacturing overhead. By budgeting more efficient use of the allocation base, a signal is given for continuous improvement. A second approach is to budget continuous improvement in the budgeted variable overhead cost per unit of the allocation base.
   (d) Fixed manufacturing overhead. The approach here is to budget for reductions in the year-to-year amounts of fixed overhead. If these costs are appropriately classified as fixed, then they are more difficult to adjust down on a monthly basis.

6-31 (45 min.) **Budgeted costs, Kaizen improvements.**

1.

Increase in Costs for the Year Assume Trendy uses New Dye	
Units to dye	60,000
Cost differential ($1.25 – $0.40) per ounce × 3 ounces	× $2.55
Increase in costs	$153,000

Because the fine is only $120,000, Trendy would be financially better off by not switching.

2. If Trendy switches to the new dye, costs will increase by $153,000.
If Trendy implements Kaizen costing, costs will be reduced as follows:

Original monthly costs

Input	**Unit cost**	**Number of units**	**Total cost**	**Annual cost**
Fabric	$7.00	6,000*	$42,000	$504,000
Labor	$3.50	6,000*	21,000	252,000
Total			$63,000	$756,000

* (12,000 + 60,000)/12 months = 6,000 units

Monthly decrease in costs

Fabric		**Labor cost**		
Month 1	$ 42,000	Month 1	$ 21,000	
Month 2	41,580	Month 2	20,790	
Month 3	41,164	Month 3	20,582	
Month 4	40,753	Month 4	20,376	
Month 5	40,345	Month 5	20,173	
Month 6	39,942	Month 6	19,971	
Month 7	39,542	Month 7	19,771	
Month 8	39,147	Month 8	19,573	
Month 9	38,755	Month 9	19,378	
Month 10	38,368	Month 10	19,184	
Month 11	37,984	Month 11	18,992	
Month 12	37,604	Month 12	18,802	
	$477,184		$238,592	$715,776

TOTAL

Difference between costs with and without Kaizen improvements ($756,000 – $715,776)	$ 40,224

This means costs increase a net amount of $153,000 – 40,224 = $112,776

3. Reduction in materials can be accomplished by reducing waste and scrap. Reduction in direct labor can be accomplished by improving the efficiency of operations and decreasing down time.

Employees who make and dye the T-shirts may have suggestions for ways to do their jobs more efficiently. For instance, employees may recommend process changes that reduce idle time, setup time, and scrap. To motivate workers to improve efficiency, many companies have set up programs that share productivity gains with the workers. Trendy must be careful that productivity improvements and cost reductions do not in any way compromise product quality.

6-32 (30–40 min.) **Revenue and production budgets.**

This is a routine budgeting problem. The key to its solution is to compute the correct *quantities* of finished goods and direct materials. Use the following general formula:

$$\begin{pmatrix}\text{Budgeted production}\\ \text{or purchases}\end{pmatrix} = \begin{pmatrix}\text{Target ending}\\ \text{inventory}\end{pmatrix} + \begin{pmatrix}\text{Budgeted sales or}\\ \text{materials used}\end{pmatrix} - \begin{pmatrix}\text{Beginning}\\ \text{inventory}\end{pmatrix}$$

1.

Sabat Corporation
Revenues Budget for 2014

	Units	Price	Total
Thingone	62,000	$172	$10,664,000
Thingtwo	46,000	264	12,144,000
Budgeted revenues			$22,808,000

2. The CEO would want to probe if the revenue budget is sufficiently stretched. Is the revenue growing faster than the market? Should the company increase marketing and advertising spending to grow sales? Would increasing the sales force or giving salespersons stronger incentives result in higher sales?

3.

Sabat Corporation
Production Budget (in units) for 2014

	Thingone	Thingtwo
Budgeted sales in units	62,000	46,000
Add target finished goods inventories, December 31, 2014	26,000	14,000
Total requirements	88,000	60,000
Deduct finished goods inventories, January 1, 2014	21,000	13,000
Units to be produced	67,000	47,000

4.

Sabat Corporation
Direct Materials Purchases Budget (in quantities) for 2014

	Direct Materials		
	A	**B**	**C**
Direct materials to be used in production			
• Thingone (budgeted production of 67,000 units times 5 lbs. of A, 3 lbs. of B)	335,000	201,000	--
• Thingtwo (budgeted production of 47,000 units times 6 lbs. of A, 4 lbs. of B, 2 lb. of C)	282,000	188,000	94,000
Total	617,000	389,000	94,000
Add target ending inventories, December 31, 2014	40,000	35,000	12,000
Total requirements in units	657,000	424,000	106,000
Deduct beginning inventories, January 1, 2012	37,000	32,000	10,000
Direct materials to be purchased (units)	620,000	392,000	96,000

5.

Sabat Corporation
Direct Materials Purchases Budget (in dollars) for 2014

	Budgeted Purchases (Units)	**Expected Purchase Price per unit**	**Total**
Direct material A	620,000	$11	$6,820,000
Direct material B	392,000	6	2,352,000
Direct material C	96,000	5	480,000
Budgeted purchases			$9,652,000

6.

Sabat Corporation
Direct Manufacturing Labor Budget (in dollars) for 2014

	Budgeted Production (Units)	**Direct Manufacturing Labor-Hours per Unit**	**Total Hours**	**Rate per Hour**	**Total**
Thingone	67,000	3	201,000	$11	$2,211,000
Thingtwo	47,000	4	188,000	14	2,632,000
Total					$4,843,000

7.

Sabat Corporation
Budgeted Finished Goods Inventory
at December 31, 2014

Thingone:			
Direct materials costs:			
A, 5 pounds × $11	$55		
B, 3 pounds × $6	18	$ 73	
Direct manufacturing labor costs, 3 hours × $11		33	
Manufacturing overhead costs at $19 per direct manufacturing labor-hour (3 hours × $19)		57	
Budgeted manufacturing costs per unit		$163	
Finished goods inventory of Thingone $163 × 26,000 units			$4,238,000
Thingtwo:			
Direct materials costs:			
A, 6 pounds × $11	$66		
B, 4 pounds × $6	24		
C, 2 each × $5	10	$100	
Direct manufacturing labor costs, 4 hours × $14		56	
Manufacturing overhead costs at $19 per direct manufacturing labor-hour (4 hours × $19)		76	
Budgeted manufacturing costs per unit		$232	
Finished goods inventory of Thingtwo $232 × 14,000 units			3,248,000
Budgeted finished goods inventory, December 31, 2014			$7,486,000

8. The CEO would want to ask the production manager why the target ending inventories have increased. Could production be more closely tailored to demand? Could the efficiency and productivity of direct materials and direct manufacturing labor be increased? Could direct materials inventory be reduced?

9. Preparing a budget helps Saadi Corporation manage costs based on revenues and production needs, look for opportunities to increase efficiencies, reduce costs, particularly in areas where costs are high, coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate managers and employees to achieve "stretch" targets of higher revenues and lower costs.

6-33 (30 min.) **Budgeted income statement.**

1.

Smart Video Company
Budgeted Income Statement for 2014
(in thousands)

Revenues		
Equipment ($8,000 × 1.06 × 1.10)	$9,328	
Maintenance contracts ($1,900 × 1.06)	2,014	
Total revenues		$11,342
Cost of goods sold ($4,000 × 1.06 × 1.05)		4,452
Gross margin		6,890
Operating costs:		
Marketing costs ($630 + $290)	920	
Distribution costs ($100 × 1.06)	106	
Customer maintenance costs ($1,100 + $160)	1,260	
Administrative costs	920	
Total operating costs		3,206
Operating income		$3,684

2. The budget aligns with Videocom's key strategy of customer satisfaction through maintaining videoconferencing equipment by hiring maintenance technicians and increasing costs of customer maintenance by 14.55% ($160,000 ÷ $1,100,000) more than the 6% forecasted increase in sales.

3. Preparing a budget helps Videocom manage costs based on revenues and production needs, look for opportunities to increase efficiencies, reduce costs, particularly in areas where costs are high, coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate managers and employees to achieve "stretch" targets of higher revenues and lower costs.

6-34 (15 min.) **Responsibility of purchasing agent.**

The cost of the biscuits is usually the responsibility of the purchasing agent, and usually controllable by the Central Warehouse. However, in this scenario, Betty the cook has taken the responsibility for the cost of the replacement biscuits from the purchasing agent by making a purchasing decision. Because Paula holds the purchasing agent responsible for biscuit costs, and presuming that Betty knew this, Betty should have discussed her decision with the purchasing agent before sending the kitchen helper to the store.

Paula should not be angry because her employees acted to satisfy the customers on a short-term emergency basis. Presuming the Central Warehouse does not consistently have problems with their freezer, there is no way the purchasing agent could foresee the biscuit shortage and plan accordingly. Also, the problem only lasted three days, which, in the course of the year (or even the month) will not seriously harm the profits of a restaurant that sells a variety of foods. However, had they run out of biscuits for three days, this could have long-term implications for customer satisfaction and customer loyalty, and in the long run could harm profits as customers find other restaurants at which to eat breakfast.

6-35 (60 min.) **Comprehensive problem with ABC costing**

1.

Revenue Budget
For the Month of April

	Units	Selling Price	Total Revenues
Cat-allac	530	$205	$108,650
Dog-eriffic	225	310	69,750
Total			$178,400

2.

Production Budget
For the Month of April

	Product	
	Cat-allac	Dog-eriffic
Budgeted unit sales	530	225
Add target ending finished goods inventory	30	10
Total required units	560	235
Deduct beginning finished goods inventory	10	25
Units of finished goods to be produced	550	210

3.

Direct Material Usage Budget in Quantity and Dollars
For the Month of April

	Material		
	Plastic	Metal	Total
Physical Units Budget			
Direct materials required for			
Cat-allac (550 units × 4 lbs. and 0.5 lb.)	2,200 lbs.	275 lbs.	
Dog-eriffic (210 units × 6 lbs. and 1 lb.)	1,260 lbs.	210 lbs.	
Total quantity of direct material to be used	3,460 lbs.	485 lbs.	
Cost Budget			
Available from beginning direct materials inventory (under a FIFO cost-flow assumption)			
Plastic: 290 lbs. × $3.80 per lb.	$ 1,102		
Metal: 70 lbs. × $3.10 per lb.		$ 217	
To be purchased this period			
Plastic: (3,460 – 290) lbs. × $5 per lb.	15,850		
Metal: (485 – 70) lbs. × $4 per lb.		1,660	
Direct materials to be used this period	$16,952	$1,877	$18,829

Direct Material Purchases Budget
For the Month of April

	Material		
	Plastic	**Metal**	**Total**
Physical Units Budget			
To be used in production (requirement 3)	3,460 lbs.	485 lbs.	
Add target ending inventory	410 lbs.	65 lbs.	
Total requirements	3,870 lbs.	550 lbs.	
Deduct beginning inventory	290 lbs.	70 lbs.	
Purchases to be made	3,580 lbs.	480 lbs.	
Cost Budget			
Plastic: 3,580 lbs.× $5	$17,900		
Metal: 480 lbs. × $4		$1,920	
Purchases	$17,900	$1,920	$19,820

4.

Direct Manufacturing Labor Costs Budget
For the Month of April

	Output Units Produced (requirement 2)	DMLH per Unit	Total Hours	Hourly Wage Rate	Total
Cat-allac	550	3	1,650	$10	$16,500
Dog-eriffic	210	5	1,050	10	10,500
Total					$27,000

5. **Machine Setup Overhead**

	Cat-allac	Dog-eriffic	Total
Units to be produced	550	210	
Units per batch	÷ 25	÷9	
Number of batches (rounded up)	22	24	
Setup time per batch	×1.50 hrs.	×1.75 hrs.	
Total setup time	33 hrs.	42 hrs.	75 hrs.

Budgeted machine setup costs = $105 per setup hour × 75 hours
= $7,875

Processing Overhead

Budgeted machine-hours (MH) = (11 MH per unit × 550 units) + (19 MH per unit × 210 units)
= 6,050 MH + 3,990 MH = 10,040 MH

Budgeted processing costs = $10 per MH × 10,040 MH
= $100,400

Inspection Overhead

Budgeted inspection-hours = (0.5 × 22 batches) + (0.7 × 24 batches)
= 11 + 16.8 = 27.8 inspection hrs.

Budgeted inspection costs = $15 per inspection hr. × 27.8 inspection hours
= $417

Manufacturing Overhead Budget
For the Month of April

Machine setup costs	$ 7,875
Processing costs	100,400
Inspection costs	417
Total costs	$108,692

6.

Unit Costs of Ending Finished Goods Inventory
April 30

		Product			
		Cat-allac		Dog-eriffic	
	Cost per Unit of Input	Input per Unit of Output	Total	Input per Unit of Output	Total
Plastic	$ 5	4 lbs.	$ 20.00	6 lbs.	$ 30.00
Metal	4	0.5 lbs.	2.00	1 lb.	4.00
Direct manufacturing labor	10	3 hrs.	30.00	5 hrs.	50.00
Machine setup	105	0.06 hrs.[1]	6.30	0.2 hr[1]	21.00
Processing	10	11 MH	110.00	19 MH	190.00
Inspection	15	0.02 hr[2]	0.30	0.08 hr.[2]	1.20
Total			$168.60		$296.20

[1] 33 setup-hours ÷ 550 units = 0.06 hours per unit; 42 setup-hours ÷ 210 units = 0.2 hours per unit
[2] 11 inspection hours ÷ 550 units = 0.02 hours per unit; 16.8 inspection hours ÷ 210 units = 0.08 hours per unit

Ending Inventories Budget
April 30

	Quantity	Cost per unit	Total	
Direct Materials				
Plastic	410	$ 5	$2,050	
Metals	65	4	260	$ 2,310
Finished goods				
Cat-allac	30	$168.60	$5,058	
Dog-eriffic	10	296.20	2,962	8,020
Total ending inventory				$10,330

7.

Cost of Goods Sold Budget
For the Month of April

Beginning finished goods inventory, April, 1 ($1,000 + $4,650)		$ 5,650
Direct materials used (requirement 3)	$18,829	
Direct manufacturing labor (requirement 4)	27,000	
Manufacturing overhead (requirement 5)	108,692	
Cost of goods manufactured		154,521
Cost of goods available for sale		160,171
Deduct: Ending finished goods inventory, April 30 (requirement 6)		8,020
Cost of goods sold		$152,151

8.

Nonmanufacturing Costs Budget
For the Month of April

Salaries ($32,000 ÷ 2 × 1.05)	$16,800
Other fixed costs ($32,000 ÷ 2)	16,000
Sales commissions ($178,400 × 1%)	1,784
Total nonmanufacturing costs	$34,584

9.

Budgeted Income Statement
For the Month of April

Revenues	$178,400
Cost of goods sold	152,151
Gross margin	26,249
Operating (nonmanufacturing) costs	34,584
Operating income	$ (8,335)

10. Preparing a budget helps Animal Gear manage costs based on revenues and production needs, look for opportunities to increase efficiencies, reduce costs, particularly in areas where costs are high, coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate management and employees to achieve "stretch" targets of higher revenues and lower costs.

6-36 (25 min.) **Cash budget (Continuation of 6-35) (Appendix)**

Cash Budget
April 30

Cash balance, April 1	$ 5,900
Add receipts	
Cash sales ($178,400 × 10%)	17,840
Credit card sales ($178,400 × 90% × 98%)	157,349
Total cash available for needs (*x*)	$181,089
Deduct cash disbursements	
Direct materials ($8,000 + $19,820 × 50%)	$ 17,910
Direct manufacturing labor	27,000
Manufacturing overhead ($108,692 ─ $25,000 depreciation)	83,692
Nonmanufacturing salaries	16,800
Sales commissions	1,784
Other nonmanufacturing fixed costs ($16,000 ─ $10,000 depreciation)	6,000
Machinery purchase	13,000
Income taxes	5,000
Total disbursements (*y*)	$171,186
Financing	
Repayment of loan	$ 2,000
Interest at 24% ($2,000 × 24% × $\frac{1}{12}$)	40
Total effects of financing (*z*)	$ 2,040
Ending cash balance, April 30 (*x*) ─ (*y*) ─ (*z*)	$ 7,863

Note: The solution assumes that the loan is repaid. Some students may point out that the cash balance at the end of April is anticipated to be slightly less than $10,000 [$9,903 ($181,089 – $171,186)], and so Animal Gear would not repay the loan. Under this assumption, the $2,000 repayment would not be shown.

2. Animal Gear's managers prepare a cash budget in addition to the operating income budget to plan cash flows to ensure that the company has adequate cash to pay vendors, meet payroll, and pay operating expenses as these payments come due. Animal Gear could be very profitable on an accrual accounting basis, but the pattern of cash receipts from revenues might be delayed and result in insufficient cash being available to make scheduled payments for its expenses. Animal Gear's managers may then need to initiate a plan to borrow money to finance any shortfall. Building a profitable operating plan does not guarantee that adequate cash will be available, so Animal Gear's managers need to prepare a cash budget in addition to an operating income budget.

6-37 (60 min.) **Comprehensive operating budget, budgeted balance sheet.**

Note: There is a typo on page 241. The In some print version of the book, the budgeted balances in the problem balance sheet items that appear just before the requirements are as shown as balances for December 31, 2014. These balances are for December 31, 2015, and not for December 31, 2014.

1. **Schedule 1: Revenues Budget for the Year Ended December 31, 2015**

	Units	Selling Price	Total Revenues
Snowboards	2,900	$650	$1,885,000

2. **Schedule 2: Production Budget (in Units) for the Year Ended December 31, 2015**

	Snowboards
Budgeted unit sales (Schedule 1)	2,900
Add target ending finished goods inventory	200
Total requirements	3,100
Deduct beginning finished goods inventory	500
Units to be produced	2,600

3. **Schedule 3A: Direct Materials Usage Budget for the Year Ended December 31, 2015**

	Wood	Fiberglass	Total
Physical Units Budget			
Wood: 2,600 × 9.00 b.f.	23,400		
Fiberglass: 2,600 × 10.00 yards		26,000	
To be used in production	23,400	26,000	
Cost Budget			
Available from beginning inventory			
Wood: 2,040 b.f. × $32.00	$ 65,280		
Fiberglass: 1,040 b.f. × $8.00		$ 8,320	
To be used from purchases this period			
Wood: (23,400 – 2,040) × $34.00	726,240		
Fiberglass: (26,000 – 1,040) × $9.00		224,640	
Total cost of direct materials to be used	$791,520	$232,960	$1,024,480

Schedule 3B: Direct Materials Purchases Budget for the Year Ended December 31, 2015

	Wood	Fiberglass	Total
Physical Units Budget			
Production usage (from Schedule 3A)	23,400	26,000	
Add target ending inventory	1,540	2,040	
Total requirements	24,940	28,040	
Deduct beginning inventory	2,040	1,040	
Purchases	22,900	27,000	
Cost Budget			
Wood: 22,900 × $34.00	$778,600		
Fiberglass: 27,000 × $9.00		$243,000	
Purchases	$778,600	$243,000	$1,021,600

4. **Schedule 4: Direct Manufacturing Labor Budget for the Year Ended December 31, 2012**

Labor Category	Cost Driver Units	DML Hours per Driver Unit	Total Hours	Wage Rate	Total
Manufacturing labor	2,600	5.00	13,000	$29.00	$377,000

5. **Schedule 5: Manufacturing Overhead Budget for the Year Ended December 31, 2015**

	At Budgeted Level of 13,000 Direct Manufacturing Labor-Hours
Variable manufacturing overhead costs ($7.00 × 13,000)	$ 91,000
Fixed manufacturing overhead costs	81,000
Total manufacturing overhead costs	$172,000

6. Budgeted manufacturing overhead rate: $\frac{\$172,000}{13,000} = \$13.23$ per hour

7. Budgeted manufacturing overhead cost per output unit: $\frac{\$172,000}{2,600} = \$66$ per output unit

8. **Schedule 6A: Computation of Unit Costs of Manufacturing Finished Goods in 2015**

	Cost per Unit of Input[a]	Inputs[b]	Total
Direct materials			
Wood	$34.00	9.00	$306.00
Fiberglass	9.00	10.00	90.00
Direct manufacturing labor	29.00	5.00	145.00
Total manufacturing overhead			66.00
			$607.00

[a]Cost is per board foot, yard, or per hour
[b]Inputs is the amount of each input per board

9. **Schedule 6B: Ending Inventories Budget, December 31, 2015**

	Units	Cost per Unit	Total
Direct materials			
Wood	1,540	$ 34.00	$ 52,360
Fiberglass	2,040	9.00	18,360
Finished goods			
Snowboards	200	607.00	121,400
Total Ending Inventory			$192,120

10. **Schedule 7: Cost of Goods Sold Budget for the Year Ended December 31, 2015**

	From Schedule		Total
Beginning finished goods inventory January 1, 2015, $374.80 × 500	Given		$ 187,400
Direct materials used	3A	$1,024,480	
Direct manufacturing labor	4	377,000	
Manufacturing overhead	5	172,000	
Cost of goods manufactured			1,573,480
Cost of goods available for sale			1,760,880
Deduct ending finished goods inventory, December 31, 2015	6B		121,400
Cost of goods sold			$1,639,480

11. **Budgeted Income Statement for Skulas for the Year Ended December 31, 2015**

Revenues	Schedule 1		$1,885,000
Cost of goods sold	Schedule 7		1,639,480
Gross margin			245,520
Operating costs			
Variable marketing costs ($250 × 38)		$ 9,500	
Fixed nonmanufacturing costs		35,000	44,500
Operating income			$ 201,020

12. **Budgeted Balance Sheet for Skulas as of December 31, 2015**

Cash			$ 14,000
Inventory	Schedule 6B		192,120
Property, plant, and equipment (net)			854,000
Total assets		$1,060,120	
Current liabilities			$ 21,000
Long-term liabilities			182,000
Stockholders' equity			857,120
Total liabilities and stockholders' equity			$1,060,120

13. The CEO would want to probe if the revenue budget is sufficiently stretched. Is the increase growing faster than the market? Should the company increase marketing and advertising spending to grow sales? Would increasing the sales force or giving salespersons stronger incentives result in higher sales?

The CEO would want to ask the production manager if production could be more closely tailored to demand? Could the efficiency and productivity of direct materials and direct manufacturing labor be increased? Could direct materials inventory be reduced?

The CEO should set stretch targets that are challenging but achievable because creating some performance anxiety motivates employees to exert extra effort and attain better performance. A major rationale for stretch targets is the psychological motivation that comes from loss aversion—people feel the pain of loss more than the joy of success. Setting challenging

targets motivates employees to reach these targets because failing to achieve a target is seen as failing. At no point should the pressure for performance push employees to engage in illegal or unethical practices. So, while setting stretch targets, the CEO must place great emphasis on adhering to codes of conduct and following appropriate norms and values. The CEO should also not set targets that are very difficult or impossible to achieve. Such targets demotivate employees because they give up on trying to achieve them.

14. Preparing a budget helps Skulas manage costs based on revenues and production needs, look for opportunities to increase efficiencies, reduce costs, particularly in areas where costs are high, coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate management and employees to achieve "stretch" targets of higher revenues and lower costs.

6-38 (30 min.) **Cash budgeting, chapter appendix.**

Note: This problem is independent of the previous Problem 6-37. All the information needed to solve Problem 6-38 is given in Problem 6-38. There is no connection between Problem 6-37 and Problem 6-38.

1. Projected Sales

	May	June	July	August	September	October
Sales in units	480	520	750	500	460	440
Revenues (Sales in units × $650)	$312,000	$338,000	$487,500	$325,000	$299,000	

Collections of Receivables

	May	June	July	August	September	October
From sales in:						
May (15% × $312,000)			$ 46,800			
June (45%; 15% × $338,000)			152,100	$ 50,700		
July (40%; 45%; 15% × $487,500)			195,000	219,375	$ 73,125	
August (40%; 45% × $325,000)				130,000	146,250	
September (40% × $299,000)					119,600	
Total			$393,900	$400,075	$338,975	

Calculation of Payables

	May	June	July	August	September	October
Material and Labor Use, Units						
Budgeted production		750	500	460	440	
Direct materials						
Wood (board feet)		6,750	4,500	4,140	3,960	
Fiberglass (yards)		7,500	5,000	4,600	4,400	
Direct manuf. labor (hours)		3,750	2,500	2,300	2,200	
Disbursement of Payments						
Direct materials						
Wood						
(6,750; 4,500; 4,140 × $34)			$229,500	$153,000	$140,760	
Fiberglass						
(7,500; 5,000; 4,600 × $9)			67,500	45,000	41,400	
Direct manuf. labor						
(2,500; 2,300; 2,200 × $29)			72,500	66,700	63,800	
Interest payment						
(12% × $60,000 ÷12)			600	600	600	
Variable Overhead Calculation						
Variable overhead rate			$ 7	$ 7	$ 7	
Overhead driver						
(direct manuf. labor-hours)			2,500	2,300	2,200	
Variable overhead expense			$ 17,500	$ 16,100	$ 15,400	

Cash Budget for the months of July, August, September 2015

	July	August	September
Beginning cash balance	$ 14,000	$ 8,300	$114,975
Add receipts: Collection of receivables	393,900	400,075	338,975
Total cash available	$407,900	$408,375	$453,950
Deduct disbursements:			
Material purchases	$297,000	$198,000	$182,160
Direct manufacturing labor	72,500	66,700	63,800
Variable costs	17,500	16,100	15,400
Fixed manuf. and nonmanuf. costs	12,000	12,000	12,000
Interest payments	600	600	600
Total disbursements	399,600	293,400	273,960
Ending cash balance	$ 8,300	$114,975	$179,990

2. Yes. Skulas has a budgeted cash balance of $179,990 on 9/30/2015, and so it will be in a position to pay off the $60,000 1-year note on October 1, 2015.

3. No. Skulas does not maintain a $14,000 minimum cash balance in July. To maintain a $14,000 cash balance in each of the three months, it could perhaps encourage its customers to pay earlier by offering a discount. Alternatively, Skulas could seek short-term credit from a bank.

4. Skulas' managers prepare a cash budget in addition to the operating income budget to plan cash flows to ensure that the company has adequate cash to pay vendors, meet payroll, and pay operating expenses as these payments come due. Skulas could be very profitable on an accrual accounting basis, but the pattern of cash receipts from revenues might be delayed and result in insufficient cash being available to make scheduled payments for its expenses. Skulas' managers may then need to initiate a plan to borrow money to finance any shortfall. Building a profitable operating plan does not guarantee that adequate cash will be available, so Skulas' managers need to prepare a cash budget in addition to an operating income budget.

6-39 (40–50 min.) **Cash budgeting.**

Iaia Wholesale Co.
Statement of Budgeted Cash Receipts and Disbursements
For the Months of December 2014 and January 2015

	December 2014	January 2015
Cash balance, beginning	$ 30,000	$ 4,835
Add receipts:		
Collections of receivables (Schedule 1)	503,835	559,470
(a) Total cash available for needs	533,835	564,305
Deduct disbursements:		
For merchandise purchases (Schedule 2)	429,940	465,400
For variable costs (Schedule 3)	89,760	97,920
For fixed costs (Schedule 3)	9,300	9,300
(b) Total disbursements	529,000	572,620
Cash balance, end of month (a – b)	$ 4,835	$ (8,315)

Under the current projections, the cash balance as of January 31, 2015, is $(8,315), which is not sufficient to enable repayment of the $107,000 note.

Schedule 1: Collections of Receivables

Collections in	Oct. Sales	Nov. Sales	Dec. Sales	Jan. Sales	Total
December 2014	$43,050[a]	$188,700[b]	$272,085[c]	----	$503,835
January 2015		$ 94,350[d]	$168,300[e]	$296,820[f]	$559,470

[a]0.15 × $287,000 [b]0.30 × $629,000 [c]0.50 × $561,000 × 0.97
[d]0.15 × $629,000 [e]0.30 × $561,000 [f]0.50 × $612,000 × 0.97

Schedule 2: Payments for Merchandise

	December	January
Target ending inventory (in units)	1,290[a]	1,170[c]
Add units sold (sales ÷ $170)	3,300	3,600
Total requirements	4,590	4,770
Deduct beginning inventory (in units)	860[b]	1,290
Purchases (in units)	3,730	3,480
Purchases in dollars (units × $130)	$484,900	$452,400

	December	January
Cash disbursements:		
For December: accounts payable on Dec. 1, 2014;	$139,000	
60% of current month's purchases	290,940	$271,440
For January: 40% of December's purchases		193,960
	$429,940	$465,400

[a]570 units + 0.20 ($612,000 ÷ $170)
[b]$111,800 ÷ $130
[c]570 units + 0.20($510,000 ÷ $170)

Schedule 3: Marketing, Distribution, and Customer-Service Costs

Total annual fixed costs, $155,000, minus $43,400 depreciation		$111,600
Monthly fixed cost requiring cash outlay		$ 9,300
Variable cost ratio to sales = $\frac{\$670{,}000 - \$155{,}000}{\$3{,}218{,}750} = 0.16$		
December variable costs: 0.16 × $561,000 sales	$89,760	
January variable costs: 0.16 × $612,000 sales	$97,920	

2. Iaia's managers prepare a cash budget in addition to the operating income budget to plan cash flows to ensure that the company has adequate cash to pay vendors, meet payroll, and pay operating expenses as these payments come due. Iaia could be very profitable on an accrual accounting basis, but the pattern of cash receipts from revenues might be delayed and result in insufficient cash being available to make scheduled payments for its expenses. Iaia's managers may then need to initiate a plan to borrow money to finance any shortfall. Building a profitable operating plan does not guarantee that adequate cash will be available, so Iaia's managers need to prepare a cash budget in addition to an operating income budget. For example, the cash budget helps Iaia's managers recognize that Iaia will not be able to repay the note in the amount of $107,000 when it comes due on January 15, 2015. The cash budget prompts Iaia's managers to start making other arrangements for this loan, either by extending its terms or borrowing cash from elsewhere to pay it back.

6-40 (60 min.) **Comprehensive problem; ABC manufacturing, two products.**

1.

Revenues Budget
For the Year Ending December 31, 2015

	Units	Selling Price	Total Revenues
Combs	12,000	$ 9	$108,000
Brushes	14,000	$30	420,000
Total			$528,000

2a.

Total budgeted marketing costs = Budgeted variable marketing costs + Budgeted fixed marketing costs
= $21,150 + $90,000 = $111,150

Marketing allocation rate = $111,150 ÷ $528,000 = $0.2105 per sales dollar

2b.

Total budgeted distribution costs = Budgeted variable distribn. costs + Budgeted fixed distribn. costs
= $0 + $1,170 = $1,170

Combs:	12,000 units ÷ 1,000 units per delivery	12 deliveries
Brushes:	14,000 units ÷ 1,000 units per delivery	14 deliveries
Total		26 deliveries

Delivery allocation rate = $1,170 ÷ 26 deliveries = $45 per delivery

3.

Production Budget (in Units)
For the Year Ending December 31, 2015

	Product	
	Combs	Brushes
Budgeted unit sales	12,000	14,000
Add target ending finished goods inventory	1,200	1,400
Total required units	13,200	15,400
Deduct beginning finished goods inventory	600	1,200
Units of finished goods to be produced	12,600	14,200

4a.

	Combs	Brushes	Total
Machine setup overhead			
Units to be produced	12,600	14,200	
Units per batch	÷200	÷100	
Number of setups	63	142	
Hours to setup per batch	×1/3	×1	
Total setup hours	21	142	163

Total budgeted setup costs = Budgeted variable setup costs + Budgeted fixed setup costs
= $10,245 + $16,650 = $26,895

Machine setup allocation rate = $26,895 ÷ 163 setup hours = $165 per setup hour

b.

Combs:	12,600 units × 0.025 MH per unit	315 MH
Brushes:	14,200 units × 0.1 MH per unit	1,420 MH
Total		1,735 MH

Total budgeted processing costs = Budgeted variable processing costs + Budgeted fixed processing costs
= $11,640 + $30,000 = $41,640

Processing allocation rate = $41,640 ÷ 1,735 MH = $24 per MH

c.

Total budgeted inspection costs = Budgeted variable inspection costs + Budgeted fixed inspection costs
= $10,500 + $1,560 = $12,060

Inspection allocation rate = $12,060 ÷ 26,800 units = $0.45 per unit

5.

Direct Material Usage Budget in Quantity and Dollars
For the Year Ending December 31, 2015

	Material		
	Plastic	**Bristles**	**Total**
Physical Units Budget			
Direct materials required for			
Combs (12,600 units × 5 oz and 0 bunches)	63,000 oz.		
Brushes (14,200 units × 8 oz and 16 bunches)	113,600 oz.	227,200 bunches	
Total quantity of direct materials to be used	176,600 oz.	227,200 bunches	
Cost Budget			
Available from beginning direct materials inventory (under a FIFO cost-flow assumption)	$ 456	$ 1,419	
To be purchased this period			
Plastic: (176,600 oz. – 1,600 oz) × $0.30 per oz.	52,500		
Bristles: (227,200 bunches – 1,820) × $0.75 per bunch		169,035	
Direct materials to be used this period	$52,956	$170,454	$223,410

Direct Materials Purchases Budget
For the Year Ending December 31, 2015

	Material		
	Plastic	**Bristles**	**Total**
Physical Units Budget			
To be used in production (requirement 5)	176,600 oz.	227,200 bunches	
Add: Target ending direct material inventory	1,766 oz.	2,272 bunches	
Total requirements	178,366 oz.	229,472 bunches	
Deduct: Beginning direct material inventory	1,600 oz.	1,820 bunches	
Purchases to be made	176,766 oz.	227,652 bunches	
Cost Budget			
Plastic: 176,766 oz. × $0.30 per oz	$ 53,030		
Bristles : 227,652 bunches × $0.75 per bunch		$170,739	
Purchases	$ 53,030	$170,739	$223,769

6. Total budgeted matls. handlg. cost = Budgeted variable matls. handlg. cost + Budgeted fixed matls. handlg. cost
= $17,235 + $22,500 = $39,735

Materials handling allocation rate = $39,735 ÷ 176,600 oz = $0.225 per oz. of plastic

7.

Direct Manufacturing Labor Costs Budget
For the Year Ending December 31, 2015

	Output Units Produced	Direct Manufacturing Labor-Hours per Unit	Total Hours	Hourly Wage Rate	Total
Combs	12,600	0.05	630	$18	$11,340
Brushes	14,200	0.2	2,840	18	51,120
Total					$62,460

8.

Manufacturing Overhead Cost Budget
For the Year Ending December 31, 2015

	Variable	Fixed	Total
Materials handling	$17,235	$22,500	$ 39,735
Machine setup	10,245	16,650	26,895
Processing	11,640	30,000	41,640
Inspection	10,500	1,560	12,060
Total	$49,620	$70,710	$120,330

9.

Unit Costs of Ending Finished Goods Inventory
For the Year Ending December 31, 2015

		Combs		Brushes	
	Cost per Unit of Input	Input per Unit of Output	Total	Input per Unit of Output	Total
Plastic	$0.30	5 oz.	$1.50	8 oz	$ 2.40
Bristles	0.75	—	—	16 bunches	12.00
Direct manufacturing labor	18.00	0.05 hrs.	0.90	0.2 hour	3.60
Materials handling	0.225	5 oz.	1.125	8 oz	1.80
Machine setup	165.00	0.001667 hrs.[1]	0.275	0.01 setup-hr[1]	1.65
Processing	24.00	0.025 MH	0.60	0.1 MH	2.40
Inspection	0.45	1 unit	0.45	1 unit	0.45
Totals			$4.85		$24.30

[1] 21 setup-hours ÷ 12,600 units = 0.001667 hours per unit; 142 setup hours ÷ 14,200 units = 0.01 hours per unit

Ending Inventories Budget
December 31, 2015

	Quantity	Cost per unit	Total	
Direct Materials				
Plastic	1,766 oz	$0.30	$ 529.80	
Bristles	2,272 bunches	0.75	1,704.00	$ 2,233.80
Finished goods				
Combs	1,200	$4.85	$ 5,820.00	
Brushes	1,400	24.30	34,020.00	39,840.00
Total ending inventory				$42,073.80

10.

Cost of Goods Sold Budget
For the Year Ending December 31, 2015

Beginning finished goods inventory, Jan. 1 ($2,700 + $27,180)		$ 29,880
Direct materials used (requirement 5)	$223,410	
Direct manufacturing labor (requirement 7)	62,460	
Manufacturing overhead (requirement 8)	120,330	
Cost of goods manufactured		406,200
Cost of goods available for sale		436,080
Deduct: Ending finished goods inventory, December 31 (reqmt. 9)		39,840
Cost of goods sold		$396,240

11.

Nonmanufacturing Costs Budget
For the Year Ending December 31, 2015

	Variable	Fixed	Total
Marketing	$21,150	$90,000	$111,150
Distribution	0	1,170	1,170
Total	$21,150	$91,170	$112,320

12.

Budgeted Income Statement
For the Year Ending December 31, 2015

Revenue	$528,000
Cost of goods sold	396,240
Gross margin	131,760
Operating (nonmanufacturing) costs	112,320
Operating income	$ 19,440

13. Preparing a budget helps Hazlett manage costs based on revenues and production needs, look for opportunities to increase efficiencies, reduce costs, particularly in areas where costs are high, coordinate and communicate across different parts of the organization, create a framework for judging performance and facilitating learning, and motivate management and employees to achieve "stretch" targets of higher revenues and lower costs.

6-41 (15 min.) **Budgeting and ethics.**

1. The standards proposed by Kurt are not challenging. In fact, he set the target at the level his department currently achieves.

Direct materials: 7.9 lbs. × 100 units = 790 lbs.
Direct manufacturing labor: 29 min. × 100 units = 2,900 min ÷ 60 = 48.33 hrs.
Machine time: 23.6 min. × 100 units = 2,360 min. ÷ 60 = 39.33 hrs. approx

2. Kurt probably chose these standards so that his department would be able to make the goal and receive any resulting reward. With a little effort, his department can likely beat these goals.

4. Top management should point out that the targets set by Kurt are targets that the department already achieves. Top management is seeking targets that are slightly difficult to achieve, a stretch target that would challenge workers.

As discussed in the chapter, benchmarking might also be used to highlight the easy targets set by Kurt and to determine more challenging targets. Perhaps the organization has multiple plant locations that could be used as comparisons. Alternatively, management could use industry averages. Also, management should work with Kurt to better understand his department and encourage him to set more realistic targets. Finally, the reward structure should be designed to encourage increasing productivity, not beating the budget. Management could also set continuous improvement standards.

6-42 (30 min.) **Human Aspects of Budgeting in a Service Firm**

1. The manager of Bristles III has the best style because this manager is involving the workers in a decision that directly affects their work.

2. The workers will most likely be upset or even angry with the manager of Bristles I. The manager is not a stylist and yet is changing the schedule for the stylists, assuming they can work faster and need less rest between customers, without discussing this change with them or asking for input or suggestions.

   To indicate displeasure, the stylists at Bristles I could quit, or they could perform a work slowdown. This means that the manager will schedule a customer for a 40 minute appointment, but the stylist will spend more than 40 minutes with each customer anyway. The result is that the appointments will get backed up, some customers may not get served, and overall the customers will be unhappy.

   Most of the workers in Bristles II are not likely to volunteer to work an extra hour a day. Although it would mean additional revenue for each stylist, it will make each work day

longer, and the idea was not presented to the workers in a way that appears beneficial to the workers.

To indicate displeasure with this plan, the stylist will simply not volunteer to work an extra hour a day.

3. Of course the manager of Bristles III could implement one of the plans of the other salons. That is, workers could shorten their appointment times per customer, or lengthen their work days, or a combination of both. Alternately, workers could work six days per week rather than five. However, in the case of Bristles III, the manager has invited the stylists to help solve the problem rather than the manager telling them what changes to make, so they will be more likely to agree to make changes because they are involved in the decision.

   Other things they may do:
   - The manager may let individual stylists set their own schedules. It is possible that not all customers need an hour each, and the stylists can individually book customers in a way that works in an extra customer per day.
   - They could agree to shorter breaks.
   - They could implement a monthly contest to see who can service the most customers (but still have satisfied customers) and earn rewards, including:
     - A name on a plaque for employee of the month (virtually no cost to the salon)
     - Gift certificates to local businesses (low cost to the salon)
     - Reduction in one month's rental revenue (some cost to the salon, depending on the amount of the reduction)
     - If the salon is in an area where parking is hard to find or costly, a month of free parking or an assigned parking space

6-43 (60 min.) **Comprehensive budgeting problem; activity-based costing, operating and financial budgets.**

1a.

Revenues Budget
For the Month of June, 2015

	Units	Selling Price	Total Revenues
Regular	2,000	$120	$240,000
Deluxe	3,000	195	585,000
Total			$825,000

b.

Production Budget
For the Month of June, 2015

	Product	
	Regular	**Deluxe**
Budgeted unit sales	2,000	3,000
Add: target ending finished goods inventory	400	600
Total required units	2,400	3,600
Deduct: beginning finished goods inventory	250	650
Units of finished goods to be produced	2,150	2,950

c.

Direct Material Usage Budget in Quantity and Dollars
For the Month of June, 2015

	Material		
	Cloth	**Wood**	**Total**
Physical Units Budget			
Direct materials required for			
Regular (2,150 units × 1.3 yd.; 0 b.f.)	2,795 yds.	0 b.f.	
Deluxe (2,950 units × 1.5 yds.; 2 b.f.)	4,425 yds.	5,900 b.f.	
Total quantity of direct materials to be used	7,220 yds.	5,900 b.f.	
Cost Budget			
Available from beginning direct materials inventory			
(under a FIFO cost-flow assumption)	$ 3,219	$ 6,060	
To be purchased this period			
Cloth: (7,220 yd. – 610 yd.) × $5.25 per yd.	34,703		
Wood: (5,900 – 800) × $7.50 per b. f.		38,250	
Direct materials to be used this period	$37,922	$44,310	$82,232

Direct Materials Purchases Budget
For the Month of June, 2015

	Material		
	Cloth	**Wood**	**Total**
Physical Units Budget			
To be used in production	7,220 yds.	5,900 ft	
Add: Target ending direct material inventory	386 yds.	295 ft	
Total requirements	7,606 yds.	6,195 ft	
Deduct: beginning direct material inventory	610 yds.	800 ft	
Purchases to be made	6,996 yds.	5,395 ft	
Cost Budget			
Cloth: (6,996 yds. × $5.25 per yd.)	$36,729		
Wood: (5,395 ft × $7.50 per b.f.)		$40,463	
Total	$36,729	$40,463	$77,192

d.

Direct Manufacturing Labor Costs Budget
For the Month of June, 2015

	Output Units Produced	**Direct Manufacturing Labor-Hours per Unit**	**Total Hours**	**Hourly Wage Rate**	**Total**
Regular	2,150	5	10,750	$15	$161,250
Deluxe	2,950	7	20,650	15	309,750
Total			31,400		$471,000

e.

Manufacturing Overhead Costs Budget
For the Month of June 2015

	Total
Machine setup (Regular 43 batches[1] × 2 hrs./batch + Deluxe 59 batches[2] × 3 hrs./batch) × $18/hour	$ 4,734
Processing (31,400 DMLH × $1.80)	56,520
Inspection (5,100 pairs × $1.35 per pair)	6,885
Total	$68,139

[1]Regular: 2,150 pairs ÷ 50 pairs per batch = 43; [2]Deluxe: 2,950 pairs ÷ 50 pairs per batch = 59

f.

Unit Costs of Ending Finished Goods Inventory
For the Month of June, 2015

		Regular		Deluxe	
	Cost per Unit of Input	Input per Unit of Output	Total	Input per Unit of Output	Total
Cloth	$ 5.25	1.3 yd	$ 6.83	1.5 yd	$ 7.88
Wood	7.50	0 b.f.	0.00	2 b.f.	15.00
Direct manufacturing labor	15.00	5 hr.	75.00	7 hrs.	105.00
Machine setup	18.00	0.04 hr. [1]	0.72	0.06 hr[1]	1.08
Processing	1.80	5 hrs	9.00	7 hrs	12.60
Inspection	1.35	1 pair	1.35	1 pair	1.35
Total			$92.90		$142.91

[1] 2 hours per setup ÷ 50 pairs per batch = 0.04 hr. per unit;
3 hours per setup ÷ 50 pairs per batch = 0.06 hr. per unit.

Ending Inventories Budget
June, 2015

	Quantity	Cost per unit	Total	
Direct Materials				
Cloth	386 yards	$5.25	$2,026.50	
Wood	295 b.f.	7.50	2,212.50	$ 4,239
Finished goods				
Regular	400	$ 92.90	$37,160	
Deluxe	600	142.91	85,746	122,906
Total ending inventory				$127,145

g.

Cost of Goods Sold Budget
For the Month of June, 2015

Beginning finished goods inventory, June 1 ($23,250 + $92,625)		$115,875
Direct materials used (requirement c)	$ 82,232	
Direct manufacturing labor (requirement d)	471,000	
Manufacturing overhead (requirement e)	68,139	
Cost of goods manufactured		621,371
Cost of goods available for sale		737,246
Deduct ending finished goods inventory, June 30 (requirement f)		122,906
Cost of goods sold		$614,340

h.

Nonmanufacturing Costs Budget
For the Month of June, 2015

	Total
Marketing and general administration	
8% × $825,000	$66,000
Shipping	
(5,000 pairs ÷ 40 pairs per shipment) × $15	1,875
Total	$67,875

2.

Cash Budget
June 30, 2015

Cash balance, June 1 (from Balance Sheet)	$ 9,435
Add receipts	
Collections from May accounts receivable	307,800
Collections from June accounts receivable	
($825,000 × 60%)	495,000
Total collection from customers	802,800
Total cash available for needs (*x*)	$812,235
Deduct cash disbursements	
Direct material purchases in May	$ 15,600
Direct material purchases in June	
($77,192 × 80%)	61,754
Direct manufacturing labor	471,000
Manufacturing overhead	
($68,139 × 70% because 30% is depreciation)	47,697
Nonmanufacturing costs	
($67,875 × 90% because 10% is depreciation)	61,088
Taxes	10,800
Dividends	15,000
Total disbursements (*y*)	$682,939
Financing	
Interest at 6% ($150,000 × 6% × 1 ÷ 12) (*z*)	$ 750
Ending cash balance, June 30 (*x*) – (*y*) – (*z*)	$128,546

3.

Budgeted Income Statement
For the Month of June, 2015

Revenues	$825,000	
Bad debt expense ($825,000 × 2%)	16,500	
Net revenues		$808,500
Cost of goods sold		614,340
Gross margin		194,160
Operating (nonmanufacturing) costs	$67,875	
Interest expense (for June)	750	68,625
Net income		$125,535

Budgeted Balance Sheet
June 30, 2015

Assets		
Cash		$ 128,546
Accounts receivable ($825,000 × 40%)	$330,000	
Less: allowance for doubtful accounts	16,500	313,500
Inventories		
Direct materials	$ 4,239	
Finished goods	122,906	127,145
Fixed assets	$870,000	
Less: accumulated depreciation		
($136,335 + $68,139 × 30% + $67,875 × 10%))	163,564	706,436
Total assets		$1,275,627

Liabilities and Equity	
Accounts payable ($77,192 × 20%)	$ 15,438
Interest payable	750
Long-term debt	150,000
Common stock	300,000
Retained earnings ($698,904 + $125,535–$15,000)	809,439
Total liabilities and equity	$1,275,627