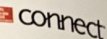


All applicable Exercises are available in Connect. 

Exercises

■ **Exercise 9-21**
Missing Amounts; Various
Types of Budgets
(LO 9-3, 9-5, 9-6)

Fill in the missing amounts in the following schedules.

	April	May	June
1. Sales*	\$80,000	\$60,000	\$?
Cash receipts:			
From cash sales	\$?	\$?	\$45,000
From sales on account*	\$?	\$?	\$?
Total cash receipts			
2. Accounts payable, 12/31/x0		300,000 euros	
Purchase of goods and services on account during 20x1		1,200,000	
Payments of accounts payable during 20x1		?	
Accounts payable, 12/31/x1		400,000	
3. Accounts receivable, 12/31/x0		340,000 yen†	
Sales on account during 20x1		900,000	
Collections of accounts receivable during 20x1		780,000	
Accounts receivable, 12/31/x1		?	
4. Accumulated depreciation, 12/31/x0		\$ 810,000	
Depreciation expense during 20x1		150,000	
Accumulated depreciation, 12/31/x1		?	
5. Retained earnings, 12/31/x0		\$2,050,000	
Net income for 20x1		400,000	
Dividends paid in 20x1		–0–	
Retained earnings, 12/31/x1		?	

*Half of each month's sales are on account. March sales amounted to \$60,000.

†60% of credit sales is collected in the month of sale; 40% is collected in the following month.

Yen is the Japanese national currency.

■ **Exercise 9-22**
City or State Budget; Use of
Internet
(LO 9-2, 9-3)



■ **Exercise 9-23**
Budgeting Production and
Direct-Material Purchases
(LO 9-3, 9-6)

Choose a city or state in the United States (or a Canadian city or province), and use the Internet to explore the annual budget of the governmental unit you selected. For example, you could check out the budget for [Houston, Texas](http://www.houstontx.gov/budget), at www.houstontx.gov/budget.

Required: List three items in the budget that you found surprising or particularly interesting, and explain why.

Bodin Company budgets on an annual basis. The following beginning and ending inventory levels (in units) are planned for the year 20x1. Two units of raw material are required to produce each unit of finished product.

	January 1	December 31
Raw material	35,000	45,000
Work in process	12,000	12,000
Finished goods	80,000	50,000

Required:

- If Bodin Company plans to sell 480,000 units during the year, compute the number of units the firm would have to manufacture during the year.
- If 500,000 finished units were to be manufactured by Bodin Company during the year, determine the amount of raw material to be purchased.

(CMA, adapted)

Coyote Loco, Inc., a distributor of salsa, has the following historical collection pattern for its credit sales.

■ **Exercise 9-24**
Cash Collections
(LO 9-3, 9-5)

- 70 percent collected in the month of sale.
- 15 percent collected in the first month after sale.
- 10 percent collected in the second month after sale.
- 4 percent collected in the third month after sale.
- 1 percent uncollectible.

The sales on account have been budgeted for the last seven months as follows:

June	\$ 49,000
July	60,000
August	70,000
September	80,000
October	90,000
November	100,000
December	85,000

Required:

- Compute the estimated total cash collections during October from credit sales.
- Compute the estimated total cash collections during the fourth quarter from sales made on account during the fourth quarter.
- Build a spreadsheet:** Construct an Excel spreadsheet to solve both of the preceding requirements. Show how the solution will change if the following information changes: sales in June and July were \$50,000 and \$65,000, respectively.

(CMA, adapted)

Greener Grass Fertilizer Company plans to sell 200,000 units of finished product in July and anticipates a growth rate in sales of 5 percent per month. The desired monthly ending inventory in units of finished product is 80 percent of the next month's estimated sales. There are 160,000 finished units in inventory on June 30. Each unit of finished product requires four pounds of raw material at a cost of \$1.15 per pound. There are 700,000 pounds of raw material in inventory on June 30.

Required:

- Compute the company's total required production in units of finished product for the entire three-month period ending September 30.
- Independent of your answer to requirement (1), assume the company plans to produce 600,000 units of finished product in the three-month period ending September 30, and to have raw-material inventory on hand at the end of the three-month period equal to 25 percent of the use in that period. Compute the total estimated cost of raw-material purchases for the entire three-month period ending September 30.

(CMA, adapted)

The following information is from Tejas WindowTint's financial records.

Month	Sales	Purchases
April	\$72,000	\$42,000
May	66,000	48,000
June	60,000	36,000
July	78,000	54,000

Collections from customers are normally 70 percent in the month of sale, 20 percent in the month following the sale, and 9 percent in the second month following the sale. The balance is expected to be uncollectible. All purchases are on account. Management takes full advantage of the 2 percent discount allowed on purchases paid for by the tenth of the following month. Purchases for August are budgeted at \$60,000, and sales for August are forecasted at \$66,000. Cash disbursements for expenses are expected to be \$14,400 for the month of August. The company's cash balance on August 1 was \$22,000.

■ **Exercise 9-25**
Budgeting Production and
Raw-Material Purchases
(LO 9-3, 9-6)

■ **Exercise 9-26**
Cash Budgeting
(LO 9-3, 9-5)

Required: Prepare the following schedules.

1. Expected cash collections during August.
2. Expected cash disbursements during August.
3. Expected cash balance on August 31.

Exercise 9-27
Budgetary Slack; Bank
(LO 9-9)



Tanya Williams is the new accounts manager at East Bank of Mississippi. She has just been asked to project how many new bank accounts she will generate during 20x2. The economy of the county in which the bank operates has been growing, and the bank has experienced a 10 percent increase in its number of bank accounts over each of the past five years. In 20x1, the bank had 10,000 accounts.

The new accounts manager is paid a salary plus a bonus of \$15 for every new account she generates above the budgeted amount. Thus, if the annual budget calls for 500 new accounts, and 540 new accounts are obtained, Williams's bonus will be \$600 ($40 \times \15).

Williams believes the economy of the county will continue to grow at the same rate in 20x2 as it has in recent years. She has decided to submit a budgetary projection of 700 new accounts for 20x2.

Required: Your consulting firm has been hired by the bank president to make recommendations for improving its operations. Write a memorandum to the president defining and explaining the negative consequences of budgetary slack. Also discuss the bank's bonus system for the new accounts manager and how the bonus program tends to encourage budgetary slack.

Exercise 9-28
Using Budgets for Financial
Planning
(LO 9-2, 9-5, 9-7)

Sound Investments, Inc. is a large retailer of stereo equipment. The controller is about to prepare the budget for the first quarter of 20x2. Past experience has indicated that 75 percent of the store's sales are cash sales. The collection experience for the sales on account is as follows:

- 80 percent during month of sale
- 15 percent during month following sale
- 5 percent uncollectible

The total sales for December 20x1 are expected to be \$190,000. The controller feels that sales in January 20x2 could range from \$100,000 to \$160,000.

Required:

1. Demonstrate how financial planning can be used to project cash receipts in January of 20x2 for three different levels of January sales. Use the following columnar format.

	Total Sales in January 20x2		
	\$100,000	\$130,000	\$160,000
Cash receipts in January 20x2:			
From December sales on account	\$	\$	\$
From January cash sales			
From January sales on account			
Total cash receipts	\$	\$	\$

2. How could the controller of Sound Investments, Inc. use this financial planning approach to help in planning operations for January?

Exercise 9-29
Budgeted Financial State-
ments; Retailer
(LO 9-3, 9-5)

Handy Hardware is a retail hardware store. Information about the store's operations follows.

- November 20x1 sales amounted to \$200,000.
- Sales are budgeted at \$220,000 for December 20x1 and \$200,000 for January 20x2.
- Collections are expected to be 60 percent in the month of sale and 38 percent in the month following the sale. Two percent of sales are expected to be uncollectible. Bad debts expense is recognized monthly.
- The store's gross margin is 25 percent of its sales revenue.

- A total of 80 percent of the merchandise for resale is purchased in the month prior to the month of sale, and 20 percent is purchased in the month of sale. Payment for merchandise is made in the month following the purchase.
- Other monthly expenses paid in cash amount to \$22,600.
- Annual depreciation is \$216,000.

The company's balance sheet as of November 30, 20x1, is as follows:

HANDY HARDWARE, INC. Balance Sheet November 30, 20x1	
Assets	
Cash	\$ 22,000
Accounts receivable (net of \$3,500 allowance for uncollectible accounts)	76,000
Inventory	140,000
Property, plant, and equipment (net of \$590,000 accumulated depreciation)	862,000
Total assets	\$1,100,000
Liabilities and Stockholders' Equity	
Accounts payable	\$ 162,000
Common stock	795,000
Retained earnings	143,000
Total liabilities and stockholders' equity	\$1,100,000

Required: Compute the following amounts.

1. The budgeted cash collections for December 20x1.
2. The budgeted income (loss) before income taxes for December 20x1.
3. The projected balance in accounts payable on December 31, 20x1.

(CMA, adapted)

Metropolitan Dental Associates is a large dental practice in Chicago. The firm's controller is preparing the budget for the next year. The controller projects a total of 48,000 office visits, to be evenly distributed throughout the year. Eighty percent of the visits will be half-hour appointments, and the remainder will be one-hour visits. The average rates for professional dental services are \$40 for half-hour appointments and \$70 for one-hour office visits. Ninety percent of each month's professional service revenue is collected during the month when services are rendered, and the remainder is collected the month following service. Uncollectible billings are negligible. Metropolitan's dental associates earn \$60 per hour.

Metropolitan uses activity-based budgeting to budget office overhead and administrative expenses. Two cost drivers are used: office visits and direct professional labor. The cost-driver rates are as follows:

Patient registration and records	\$2.00 per office visit (of any length)
All other overhead and administrative expenses	\$5.00 per direct professional labor hour

Required: Prepare the following budget schedules.

1. Direct-professional-labor budget for the month of June.
2. Cash collections during June for professional services rendered during May and June.
3. Overhead and administrative expense budget for the month of June.
4. **Build a spreadsheet:** Construct an Excel spreadsheet to solve all of the preceding requirements. Show how the solution will change if the following information changes: a total of 54,000 office visits are expected for the year and 70 percent of the office visits are half-hour appointments.

Exercise 9-30
Professional Services Bud-
get; Dental Practice; Activity-
Based Budgeting
(LO 9-3, 9-4, 9-5)

Problems

■ **Problem 9–31**
Production and Direct-Labor Budgets; Activity-Based Overhead Budget
(LO 9-3, 9-4, 9-5, 9-6)

1. Total direct-labor cost for the quarter: \$470,155

Spiffy Shades Corporation manufactures artistic frames for sunglasses. Talia Demarest, controller, is responsible for preparing the company's master budget. In compiling the budget data for 20x1, Demarest has learned that new automated production equipment will be installed on March 1. This will reduce the direct labor per frame from 1 hour to .75 hour.

Labor-related costs include pension contributions of \$.50 per hour, workers' compensation insurance of \$.20 per hour, employee medical insurance of \$.80 per hour, and employer contributions to Social Security equal to 7 percent of direct-labor wages. The cost of employee benefits paid by the company on its employees is treated as a direct-labor cost. Spiffy Shades Corporation has a labor contract that calls for a wage increase to \$18.00 per hour on April 1, 20x1. Management expects to have 16,000 frames on hand at December 31, 20x0, and has a policy of carrying an end-of-month inventory of 100 percent of the following month's sales plus 50 percent of the second following month's sales.

These and other data compiled by Demarest are summarized in the following table.

	January	February	March	April	May
Direct-labor hours per unit	1.0	1.0	.75	.75	.75
Wage per direct-labor hour	\$16.00	\$16.00	\$16.00	\$18.00	\$18.00
Estimated unit sales	10,000	12,000	8,000	9,000	9,000
Sales price per unit	\$50.00	\$47.50	\$47.50	\$47.50	\$47.50
Production overhead:					
Shipping and handling (per unit sold)	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Purchasing, material handling, and inspection (per unit produced)	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
Other production overhead (per direct-labor hour)	\$7.00	\$7.00	\$7.00	\$7.00	\$7.00

Required:

1. Prepare a production budget and a direct-labor budget for Spiffy Shades Corporation by month and for the first quarter of 20x1. Both budgets may be combined in one schedule. The direct-labor budget should include direct-labor hours and show the detail for each direct-labor cost category.
2. For each item used in the firm's production budget and direct-labor budget, identify the other components of the master budget (except for financial statement budgets) that also would, directly or indirectly, use these data.
3. Prepare a production overhead budget for each month and for the first quarter.

(CMA, adapted)

■ **Problem 9–32**
Revenue and Labor Budgeting for a University; Budget Linkages
(LO 9-3, 9-5, 9-7, 9-8)

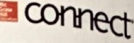
2. Faculty needed: 672

Western State University (WSU) is preparing its master budget for the upcoming academic year. Currently, 8,000 students are enrolled on campus; however, the admissions office is forecasting a 5 percent growth in the student body despite a tuition hike to \$75 per credit hour. The following additional information has been gathered from an examination of university records and conversations with university officials:

- WSU is planning to award 120 tuition-free scholarships.
- The average class has 25 students, and the typical student takes 15 credit hours each semester. Each class is three credit hours.
- WSU's faculty members are evaluated on the basis of teaching, research, and university and community service. Each faculty member teaches five classes during the academic year.

Required:

1. Prepare a tuition revenue budget for the upcoming academic year.
2. Determine the number of faculty members needed to cover classes.
3. Assume there is a shortage of full-time faculty members. List at least five actions that WSU might take to accommodate the growing student body.

All applicable Problems are available in Connect. 

4. You have been requested by the university's administrative vice president (AVP) to construct budgets for other areas of operation (e.g., the library, grounds, dormitories, and maintenance). The AVP noted: "The most important resource of the university is its faculty. Now that you know the number of faculty needed, you can prepare the other budgets. Faculty members are indeed the key driver—without them we don't operate." Does the administrative vice president really understand the linkages within the budgeting process? Explain.

Mary and Kay, Inc., a distributor of cosmetics throughout Florida, is in the process of assembling a cash budget for the first quarter of 20x1. The following information has been extracted from the company's accounting records:

- All sales are on account. Sixty percent of customer accounts are collected in the month of sale; 35 percent are collected in the following month. Uncollectibles amounting to 5 percent of sales are anticipated, and management believes that only 20 percent of the accounts outstanding on December 31, 20x0, will be recovered and that the recovery will be in January 20x1.
- Seventy percent of the merchandise purchases are paid for in the month of purchase; the remaining 30 percent are paid for in the month after acquisition.
- The December 31, 20x0, balance sheet disclosed the following selected figures: cash, \$20,000; accounts receivable, \$55,000; and accounts payable, \$22,000.
- Mary and Kay, Inc. maintains a \$20,000 minimum cash balance at all times. Financing is available (and retired) in \$1,000 multiples at an 8 percent interest rate, with borrowings taking place at the beginning of the month and repayments occurring at the end of the month. Interest is paid at the time of repaying principal and computed on the portion of principal repaid at that time.
- Additional data:

	January	February	March
Sales revenue	\$150,000	\$180,000	\$185,000
Merchandise purchases	90,000	100,000	140,000
Cash operating costs	31,000	24,000	45,000
Proceeds from sale of equipment	—	—	5,000

Required:

1. Prepare a schedule that discloses the firm's total cash collections for January through March.
2. Prepare a schedule that discloses the firm's total cash disbursements for January through March.
3. Prepare a schedule that summarizes the firm's financing cash flows for January through March. The schedule should present the following information in the order cited: Beginning cash balance, total receipts (from requirement (1)), total payments (from requirement (2)), the cash excess (deficiency) before financing, borrowing needed to maintain minimum balance, loan principal repaid, loan interest paid, and ending cash balance.

Badlands, Inc. manufactures a household fan that sells for \$40 per unit. All sales are on account, with 40 percent of sales collected in the month of sale and 60 percent collected in the following month. The data that follow were extracted from the company's accounting records.

- Badlands maintains a minimum cash balance of \$30,000. Total payments in January 20x1 are budgeted at \$390,000.
- A schedule of cash collections for January and February of 20x1 revealed the following receipts for the period:

	Cash Receipts	
	January	February
From December 31 accounts receivable	\$216,000	
From January sales	152,000	\$228,000
From February sales		156,800

- March 20x1 sales are expected to total 10,000 units.
- Finished-goods inventories are maintained at 20 percent of the following month's sales.
- The December 31, 20x0, balance sheet revealed the following selected figures: cash, \$45,000; accounts receivable, \$216,000; and finished goods, \$44,700.

■ **Problem 9–33**
Cash budgeting
(LO 9-3, 9-5)

2. Total cash disbursements, February: \$121,000

■ **Problem 9–34**
Relationships of the Master Budget Components
(LO 9-3, 9-5, 9-6)

5. December 31 inventory: 1,900 units

Required:

- Determine the number of units that Badlands sold in December 20x0.
- Compute the sales revenue for March 20x1.
- Compute the total sales revenue to be reported on Badlands' budgeted income statement for the first quarter of 20x1.
- Determine the accounts receivable balance to be reported on the March 31, 20x1, budgeted balance sheet.
- Calculate the number of units in the December 31, 20x0, finished-goods inventory.
- Calculate the number of units of finished goods to be manufactured in January 20x1.
- Calculate the financing required in January, if any, to maintain the firm's minimum cash balance.

Alpha-Tech, a rapidly growing distributor of electronic components, is formulating its plans for 20x5. Carol Jones, the firm's marketing director, has completed the following sales forecast.

ALPHA-TECH 20x5 Forecasted Sales (in thousands)			
Month	Sales	Month	Sales
January	\$ 9,000	July	\$15,000
February	10,000	August	15,000
March	9,000	September	16,000
April	11,500	October	16,000
May	12,500	November	15,000
June	14,000	December	17,000

Phillip Smith, an accountant in the Planning and Budgeting Department, is responsible for preparing the cash flow projection. The following information will be used in preparing the cash flow projection.

- Alpha-Tech's excellent record in accounts receivable collection is expected to continue. Sixty percent of billings are collected the month after the sale, and the remaining 40 percent two months after.
- The purchase of electronic components is Alpha-Tech's largest expenditure, and each month's cost of goods sold is estimated to be 40 percent of sales. Seventy percent of the parts are received by Alpha-Tech one month prior to sale, and 30 percent are received during the month of sale.
- Historically, 75 percent of accounts payable has been paid one month after receipt of the purchased components, and the remaining 25 percent has been paid two months after receipt.
- Hourly wages and fringe benefits, estimated to be 30 percent of the current month's sales, are paid in the month incurred.
- General and administrative expenses are projected to be \$15,620,000 for the year. The breakdown of these expenses is presented in the following schedule. All cash expenditures are paid uniformly throughout the year, except the property taxes, which are paid in four equal installments at the end of each quarter.

20x5 Forecasted General and Administrative Costs (in thousands)	
Salaries and fringe benefits	\$ 3,200
Promotion	3,800
Property taxes	1,360
Insurance	2,000
Utilities	1,800
Depreciation	3,460
Total	\$15,620

Problem 9-35
Cash Budget; Wholesaler
(LO 9-2, 9-3, 9-5)

1. Total cash disbursements,
April: \$9,785,000

Ending cash balance, June:
\$2,605,000

- Income-tax payments are made at the beginning of each calendar quarter based on the income of the prior quarter. Alpha-Tech is subject to an income-tax rate of 40 percent. Alpha-Tech's operating income for the first quarter of 20x5 is projected to be \$3,200,000. The company pays 100 percent of the estimated tax payment.
- Alpha-Tech maintains a minimum cash balance of \$500,000. If the cash balance is less than \$500,000 at the end of each month, the company borrows amounts necessary to maintain this balance. All amounts borrowed are repaid out of the subsequent positive cash flow. The projected April 1, 20x5, opening balance is \$500,000.
- Alpha-Tech has no short-term debt as of April 1, 20x5.
- Alpha-Tech uses a calendar year for both financial reporting and tax purposes.

Required:

- Prepare a cash budget for Alpha-Tech by month for the second quarter of 20x5. For simplicity, ignore any interest expense associated with borrowing.
- Discuss why cash budgeting is important for Alpha-Tech.

(CMA, adapted)

Tulsa Chemical Company (TCC) produces and distributes industrial chemicals. TCC's earnings increased sharply in 20x1, and bonuses were paid to the management staff for the first time in several years. Bonuses are based in part on the amount by which reported income exceeds budgeted income.

Jim Kern, vice president of finance, was pleased with TCC's 20x1 earnings and thought that the pressure to show financial results would ease. However, Ellen North, TCC's president, told Kern that she saw no reason why the 20x2 bonuses should not be double those of 20x1. As a result, Kern felt pressure to increase reported income in order to exceed budgeted income by an even greater amount. This would assure increased bonuses.

Kern met with Bill Keller of Pristeele, Inc., a primary vendor of TCC's manufacturing supplies and equipment. Kern and Keller have been close business contacts for many years. Kern asked Keller to identify all of TCC's purchases of perishable supplies as equipment on Pristeele's sales invoices. The reason Kern gave for his request was that TCC's president had imposed stringent budget constraints on operating expenses but not on capital expenditures. Kern planned to capitalize the purchase of perishable supplies, and include them with the Equipment account on the balance sheet. In this way Kern could defer the expense recognition for these items to a later year. This procedure would increase reported earnings, leading to increased bonuses. Keller agreed to do as Kern had asked.

While analyzing the second quarter financial statements, Gary Wood, TCC's controller, noticed a large decrease in supplies expense from one year ago. Wood reviewed the Supplies Expense account and noticed that only equipment and no supplies had been purchased from Pristeele, a major source for supplies. Wood, who reports to Kern, immediately brought this to Kern's attention.

Kern told Wood of North's high expectations and of the arrangement made with Keller of Pristeele. Wood told Kern that his action was an improper accounting treatment for the supplies purchased from Pristeele. Wood requested that he be allowed to correct the accounts and urged that the arrangement with Pristeele be discontinued. Kern refused the request and told Wood not to become involved in the arrangement with Pristeele.

After clarifying the situation in a confidential discussion with an objective and qualified peer within TCC, Wood arranged to meet with North, TCC's president. At the meeting, Wood disclosed the arrangement Kern had made with Pristeele.

Required:

- Explain why the use of alternative accounting methods to manipulate reported earnings is unethical.
- Is Gary Wood, TCC's controller, correct in saying that the supplies purchased from Pristeele, Inc. were accounted for improperly? Explain your answer.
- Assuming that Jim Kern's arrangement with Pristeele, Inc. was in violation of the standards of ethical professional practice for managerial accountants, discuss whether the actions of Wood were appropriate or inappropriate. (The guidelines for Resolution of Ethical Conflict are given in Chapter 1.)

(CMA, adapted)

Problem 9-36
Ethics; Budgetary Pressure;
Management Bonuses; Bud-
getary Constraints
(LO 9-1, 9-7, 9-8, 9-9)



Problem 9-37
Completion of Budget
Schedules
(LO 9-3, 9-5, 9-6)

2. Planned production, June:
15,000 sets
4. Planned direct-labor cost,
May: \$378,000

Scholastic Furniture, Inc. manufactures a variety of desks, chairs, tables, and shelf units that are sold to public school systems throughout the Midwest. The controller of the company's Desk Division is currently preparing a budget for the second quarter of the year. The following sales forecast has been made by the division's sales manager.

	10,000 desk-and-chair sets
April	12,000 desk-and-chair sets
May	15,000 desk-and-chair sets
June	

Each desk-and-chair set requires 10 board feet of pine planks and 1.5 hours of direct labor. Each set sells for \$50. Pine planks cost \$.50 per board foot, and the division ends each month with enough wood to cover 10 percent of the next month's production requirements. The division incurs a cost of \$20 per hour for direct-labor wages and fringe benefits. The division ends each month with enough finished-goods inventory to cover 20 percent of the next month's sales.

Required: Complete the following budget schedules.

1. Sales budget:

	April	May	June
Sales (in sets)	10,000		
Sales price per set	× \$50		
Sales revenue	\$500,000		

2. Production budget (in sets):

	April	May	June
Sales	10,000		
Add: Desired ending inventory	2,400		3,000
Total requirements	12,400		
Less: Projected beginning inventory	2,000		
Planned production	10,400		

3. Raw-material purchases:

	April	May	June
Planned production (sets)	10,400		
Raw material required per set (board feet)	× 10		
Raw material required for production (board feet)	104,000		
Add: Desired ending inventory of raw material, in board feet (10% of next month's requirement)	12,600		16,000
Total requirements	116,600		
Less: Projected beginning inventory of raw material, in board feet (10% of current month's requirement)	10,400		
Planned purchases of raw material (board feet)	106,200		
Cost per board foot	× \$.50		
Planned purchases of raw material (dollars)	\$53,100		

4. Direct-labor budget:

	April	May	June
Planned production (sets)	10,400		
Direct-labor hours per set	× 1.5		
Direct-labor hours required	15,600		
Cost per hour	× \$20		
Planned direct-labor cost	\$312,000		

5. **Build a spreadsheet:** Construct an Excel spreadsheet to solve all of the preceding requirements. Show how the solution will change if the following information changes: each set sells for \$55 and the direct-labor cost per hour is \$21.

Empire Chemical Company produces three products using three different continuous processes. The products are Yarex, Darol, and Norex. Projected sales in gallons for the three products for the years 20x2 and 20x3 are as follows:

	20x2	20x3
Yarex	60,000	65,000
Darol	40,000	35,000
Norex	25,000	30,000

- Inventories are planned for each product so that the projected finished-goods inventory at the beginning of each year is equal to 8 percent of that year's projected sales.
- Because of the continuous nature of Empire's processes, work-in-process inventory for each of the products remains constant throughout the year.
- The raw-material requirements of the three products are shown in the following chart.

Raw Material	Units	Unit Price	Yarex	Darol	Norex
Gamma	pounds	\$ 8.00	.2	.4	0
Murad	pounds	6.00	4	0	.5
Islin	gallons	5.00	1.0	.7	.5
Tarden	gallons	10.00	0	.3	.5

- Raw-material inventories are planned so that each raw material's projected inventory at the beginning of a year is equal to 10 percent of the previous year's usage of that raw material.

The conversion requirements in hours per gallon for the three products are Yarex, .07 hour; Darol, .10 hour; and Norex, .16 hour. The conversion cost of \$20 per hour is considered 100 percent variable.

Required:

1. Determine Empire Chemical Company's production budget (in gallons) for the three products for 20x2.
2. Determine Empire Chemical Company's conversion cost budget for 20x2.
3. Assuming the 20x1 usage of Islin is 100,000 gallons, determine the company's raw-material purchases budget (in dollars) for Islin for 20x2.
4. Assume that for 20x2 production, Empire Chemical Company could replace the raw material Islin with the raw material Philin. The usage of Philin would be the same as the usage of Islin. However, Philin would cost 20 percent more than Islin and would cut production times on all three products by 10 percent. Determine whether management should use Philin or Islin for the 20x2 production, supporting your decision with appropriate calculations. For this requirement, ignore any impact of beginning and ending inventory balances.

(CMA, adapted)

Vista Electronics, Inc. manufactures two different types of coils used in electric motors. In the fall of the current year, Erica Becker, the controller, compiled the following data.

- Sales forecast for 20x0 (all units to be shipped in 20x0):

Product	Units	Price
Light coil	60,000	\$120
Heavy coil	40,000	170

- Raw-material prices and inventory levels:

Raw Material	Expected Inventories, January 1, 20x0	Desired Inventories, December 31, 20x0	Anticipated Purchase Price
Sheet metal	32,000 lb.	36,000 lb.	\$8
Copper wire	29,000 lb.	32,000 lb.	5
Platforms	6,000 units	7,000 units	3

Problem 9-38
Production and Materials
Budgets
(LO 9-3, 9-6, 9-7)

2. Conversion cost budget:
\$245,040
4. Increase in cost of raw
material: \$100,820

Problem 9-39
Sales, Production, and
Purchases Budgets; Activity-
Based Overhead Budget
(LO 9-3, 9-4, 9-5, 9-6)

2. Production required (units),
heavy coils: 41,000
6. Production overhead bud-
get for 20x0, total production
overhead: \$1,464,250

- Use of raw material:

	Amount Used per Unit	
	Light Coil	Heavy Coil
Raw Material		
Sheet metal	4 lb.	5 lb.
Copper wire	2 lb.	3 lb.
Platforms		1 unit

- Direct-labor requirements and rates:

	Hours per Unit	Rate per Hour
Product		
Light coil	2	\$15
Heavy coil	3	20

- Finished-goods inventories (in units):

	Expected January 1, 20x0	Desired December 31, 20x0
Product		
Light coil	20,000	25,000
Heavy coil	8,000	9,000

- Production overhead:

Overhead Cost Item	Activity-Based Budget Rate
Purchasing and material handling	\$25 per pound of sheet metal and copper wire purchased
Depreciation, utilities, and inspection	\$4.00 per coil produced (either type)
Shipping	\$1.00 per coil shipped (either type)
General production overhead	\$3.00 per direct-labor hour

Required: Prepare the following budgets for 20x0.

- Sales budget (in dollars).
- Production budget (in units).
- Raw-material purchases budget (in quantities).
- Raw-material purchases budget (in dollars).
- Direct-labor budget (in dollars).
- Production-overhead budget (in dollars).

(CPA, adapted)

Problem 9-40
Interrelationships Between
Components of Master Budget
(LO 9-5, 9-6, 9-8)



United Security Systems, Inc. (USSI) manufactures and sells security systems. The company started by installing photoelectric security systems in offices and has expanded into the private-home market. USSI has a basic security system that has been developed into three standard products, each of which can be adapted to meet the specific needs of customers. The manufacturing operation is moderate in size, as the bulk of the component manufacturing is completed by independent contractors. The security systems are approximately 85 percent complete when received from contractors and require only final assembly in the USSI plant. Each product passes through at least one of three assembly operations.

USSI operates in a rapidly growing community. There is evidence that a great deal of new commercial construction will take place in the near future, and management has decided to pursue this new market. In order to be competitive, the firm will have to expand its operations.

In view of the expected increase in business, Sandra Feldman, the controller, believes that USSI should implement a complete budgeting system. Feldman has decided to make a formal presentation to the company's president explaining the benefits of a budgeting system and outlining the budget schedules and reports that would be necessary.

Required:

- Explain the benefits that USSI would gain from implementing a budgeting system.
- If Sandra Feldman develops a master budget:
 - Identify, in order, the schedules that will have to be prepared.
 - Identify the subsequent schedules that would be based on the schedules identified above. Use the following format for your answer.

Schedule Subsequent Schedule

(CMA, adapted)

Toronto Business Associates, a division of Maple Leaf Services Corporation, offers management and computer consulting services to clients throughout Canada and the northwestern United States. The division specializes in website development and other Internet applications. The corporate management at Maple Leaf Services is pleased with the performance of Toronto Business Associates for the first nine months of the current year and has recommended that the division manager, Richard Howell, submit a revised forecast for the remaining quarter, as the division has exceeded the annual plan year-to-date by 20 percent of operating income. An unexpected increase in billed hour volume over the original plan is the main reason for this increase in income. The original operating budget for the first three quarters for Toronto Business Associates follows.

Problem 9-41
Revised Operating Budget;
Consulting Firm
(LO 9-2, 9-5, 9-7)

1. Operating income:
\$179,600
Total compensation, management consulting: \$245,000



TORONTO BUSINESS ASSOCIATES
20x1 Operating Budget

	1st Quarter	2nd Quarter	3rd Quarter	Total for First Three Quarters
Revenue:				
Consulting fees:				
Computer system consulting	\$421,875	\$421,875	\$421,875	\$1,265,625
Management consulting	315,000	315,000	315,000	945,000
Total consulting fees	\$736,875	\$736,875	\$736,875	\$2,210,625
Other revenue	10,000	10,000	10,000	30,000
Total revenue	\$746,875	\$746,875	\$746,875	\$2,240,625
Expenses:				
Consultant salary expenses	\$386,750	\$386,750	\$386,750	\$1,160,250
Travel and related expenses	45,625	45,625	45,625	136,875
General and administrative expenses	100,000	100,000	100,000	300,000
Depreciation expense	40,000	40,000	40,000	120,000
Corporate expense allocation	50,000	50,000	50,000	150,000
Total expenses	\$622,375	\$622,375	\$622,375	\$1,867,125
Operating income	\$124,500	\$124,500	\$124,500	\$ 373,500

Howell will reflect the following information in his revised forecast for the fourth quarter.

- Toronto Business Associates currently has 25 consultants on staff: 10 for management consulting and 15 for computer systems consulting. Three additional management consultants have been hired to start work at the beginning of the fourth quarter in order to meet the increased client demand.
- The hourly billing rate for consulting revenue will remain at \$90 per hour for each management consultant and \$75 per hour for each computer consultant. However, due to the favorable increase in billing hour volume when compared to the plan, the hours for each consultant will be increased by 50 hours per quarter.

- The budgeted annual salaries and actual annual salaries, paid monthly, are the same: \$50,000 for a management consultant and \$46,000 for a computer consultant. Corporate management has approved a merit increase of 10 percent at the beginning of the fourth quarter for all 25 existing consultants, while the new consultants will be compensated at the planned rate.
- The planned salary expense includes a provision for employee fringe benefits amounting to 30 percent of the annual salaries. However, the improvement of some corporatewide employee programs will increase the fringe benefits to 40 percent.
- The original plan assumes a fixed hourly rate for travel and other related expenses for each billing hour of consulting. These are expenses that are not reimbursed by the client, and the previously determined hourly rate has proven to be adequate to cover these costs.
- Other revenue is derived from temporary rentals and interest income and remains unchanged for the fourth quarter.
- General and administrative expenses have been favorable at 7 percent below the plan; this 7 percent savings on fourth quarter expenses will be reflected in the revised plan.
- Depreciation of office equipment and personal computers will stay constant at the projected straight-line rate.
- Due to the favorable experience for the first three quarters and the division's increased ability to absorb costs, the corporate management at Maple Leaf Services has increased the corporate expense allocation by 50 percent.

Required:

- Prepare a revised operating budget for the fourth quarter for Toronto Business Associates that Richard Howell will present to corporate management.
- Discuss the reasons why an organization would prepare a revised operating budget.

(CMA, adapted)

Problem 9-42Preparation of Master Budget
(LO 9-3, 9-4, 9-5)

- Total sales revenue: \$1,100,000
- Cost of purchases (paperboard): \$97,000
- Total overhead: \$148,500
- Predetermined overhead rate: \$40 per hour



FreshPak Corporation manufactures two types of cardboard boxes used in shipping canned food, fruit, and vegetables. The canned food box (type C) and the perishable food box (type P) have the following material and labor requirements.

	Type of Box	
	C	P
Direct material required per 100 boxes:		
Paperboard (\$.20 per pound)	30 pounds	70 pounds
Corrugating medium (\$.10 per pound)	20 pounds	30 pounds
Direct labor required per 100 boxes (\$12.00 per hour)	25 hour	50 hour

The following production-overhead costs are anticipated for the next year. The predetermined overhead rate is based on a production volume of 495,000 units for each type of box. Production overhead is applied on the basis of direct-labor hours.

Indirect material	\$10,500
Indirect labor	50,000
Utilities	25,000
Property taxes	18,000
Insurance	16,000
Depreciation	29,000
Total	\$148,500

The following selling and administrative expenses are anticipated for the next year.

Salaries and fringe benefits of sales personnel	\$ 75,000
Advertising	15,000
Management salaries and fringe benefits	90,000
Clerical wages and fringe benefits	26,000
Miscellaneous administrative expenses	4,000
Total	\$210,000

The sales forecast for the next year is as follows:

	Sales Volume	Sales Price
Box type C	500,000 boxes	\$ 90.00 per hundred boxes
Box type P	500,000 boxes	130.00 per hundred boxes

The following inventory information is available for the next year. The unit production costs for each product are expected to be the same this year and next year.

	Expected Inventory January 1	Desired Ending Inventory December 31
Finished goods:		
Box type C	10,000 boxes	5,000 boxes
Box type P	20,000 boxes	15,000 boxes
Raw material:		
Paperboard	15,000 pounds	5,000 pounds
Corrugating medium	5,000 pounds	10,000 pounds

Required: Prepare a master budget for FreshPak Corporation for the next year. Assume an income tax rate of 40 percent. Include the following schedules.

- Sales budget.
- Production budget.
- Direct-material budget.
- Direct-labor budget.
- Production-overhead budget.
- Selling and administrative expense budget.
- Budgeted income statement. (*Hint:* To determine cost of goods sold, first compute the production cost per unit for each type of box. Include applied production overhead in the cost.)

Healthful Foods Inc., a manufacturer of breakfast cereals and snack bars, has experienced several years of steady growth in sales, profits, and dividends while maintaining a relatively low level of debt. The board of directors has adopted a long-run strategy to maximize the value of the shareholders' investment. In order to achieve this goal, the board of directors established the following five-year financial objectives.

- Increase sales by 12 percent per year.
- Increase income before taxes by 15 percent per year.
- Maintain long-term debt at a maximum of 16 percent of assets.

These financial objectives have been attained for the past three years. At the beginning of last year, the president of Healthful Foods, Andrea Donis, added a fourth financial objective of maintaining cost of goods sold at a maximum of 70 percent of sales. This goal also was attained last year.

The budgeting process at Healthful Foods is to be directed toward attaining these goals for the forthcoming year, a difficult task with the economy in a prolonged recession. In addition, the increased emphasis on eating healthful foods has driven up the price of ingredients used by the company

Problem 9-43
Budgeting; Financial
Objectives; Ethics
(LO 9-1, 9-5, 9-6, 9-7)

2. Increase in sales: 11.5%

