

CHAPTER 8

PROFIT PLANNING (BUDGETING)

- I. Overview of budgeting.
- II. Master budget interrelationships
- III. Comprehensive budgeting example - Building a master budget.
 1. Sales budget (with a schedule of expected cash collections).
 2. Production budget.
 3. Direct materials budget (with a schedule of expected cash disbursements for materials).
 4. Direct labor budget.
 5. Manufacturing overhead budget.
 6. Ending finished goods inventory budget.
 7. Selling and administrative expense budget.
 8. Cash budget.
 9. Budgeted income statement.
 10. Budgeted balance sheet.

I. OVERVIEW OF BUDGETING

A budget is a detailed plan for acquiring and using financial and other resources over a specified period. Budgeting involves two stages:

- **Planning:** Developing objectives and preparing various detailed budgets to achieve those objectives.
- **Control:** The steps taken by management to attain the objectives set down at the planning stage.

PURPOSES OF BUDGETING

- Budgets communicate management's plans throughout the organization.
- Budgeting forces managers to give planning top priority.
- Budgets provide a means of allocating resources to their most effective uses.
- Budgeting uncovers potential bottlenecks.
- Budgeting coordinates the activities of the entire organization.
- Budgeting provides goals that serve as benchmarks for evaluating subsequent performance.

RESPONSIBILITY ACCOUNTING

Managers should be held responsible only for those items that they can control to a significant extent.

Responsibility accounting systems enable organizations to react quickly to deviations from their plans and to learn from feedback obtained by comparing budgeted goals to actual results.

BUDGET PERIOD

Operating budgets ordinarily cover a one-year period corresponding to a company's fiscal year. Many companies divide their annual budget into four quarters. In this chapter, we focus on one-year operating budgets.

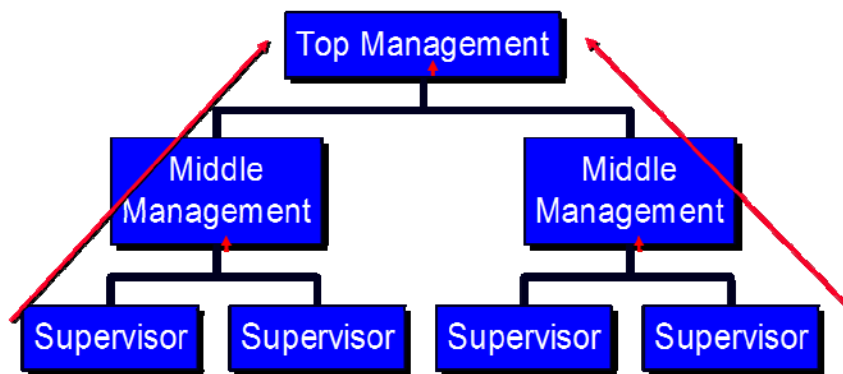
A continuous or **perpetual budget** is a 12-month budget that rolls forward one month (or quarter) as the current month (or quarter) is completed. This approach keeps managers focused on the future at least one year ahead.

SELF-IMPOSED BUDGET

A self-imposed budget or participative budget is a budget that is prepared with the full cooperation and participation of managers at all levels.

Self-imposed budgets should be reviewed by higher levels of management to prevent “budgetary slack.”

Most companies issue broad guidelines in terms of overall profits or sales. Lower level managers are directed to prepare budgets that meet those targets.



HUMAN FACTORS IN BUDGETING

- Top management’s enthusiasm and commitment to the budgeting process.
- Use the budget to motivate not to pressure or blame employees.
- Highly achievable budget targets are usually preferred.

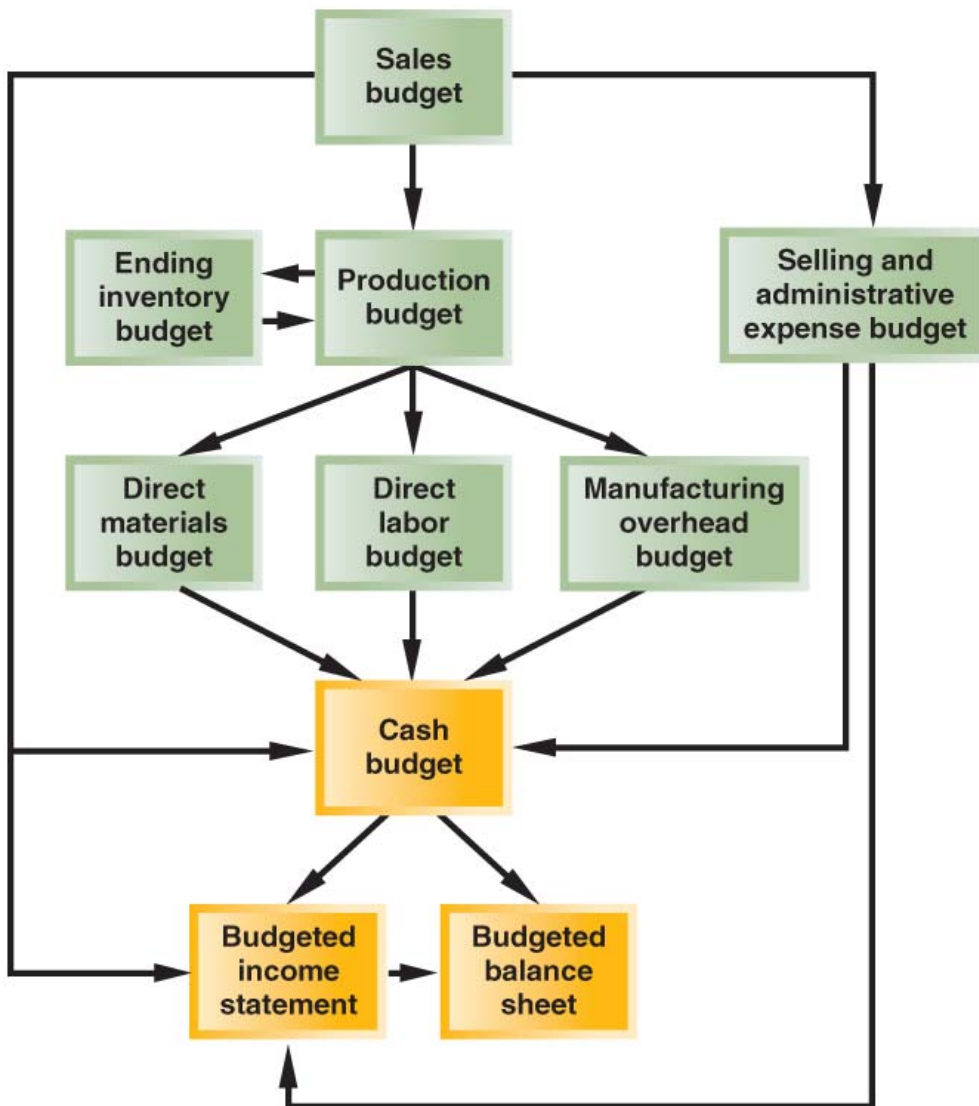
BUDGET COMMITTEE

A budget committee is usually responsible for overall policy relating to the budget program, for coordinating the preparation of the budget, for resolving disputes related to the budget, and for approving the final budget. This committee may consist of the president and the vice presidents in charge of various functions such as sales, production, purchasing, and the controller.

A standing committee responsible for

- ❖ overall policy matters relating to the budget
- ❖ coordinating the preparation of the budget
- ❖ resolving disputes related to the budget
- ❖ approving the final budget

II. MASTER BUDGET INTERRELATIONSHIPS



III. COMPREHENSIVE BUDGETING EXAMPLE

Royal Company is preparing budgets for the second quarter ending June 30.

- Budgeted sales of the company's only product for the next five months are:

| | |
|-------------|--------------|
| April..... | 20,000 units |
| May..... | 50,000 units |
| June..... | 30,000 units |
| July..... | 25,000 units |
| August..... | 15,000 units |

- The selling price is \$10 per unit.

1. SALES BUDGET

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|-----------------------------|------------------|------------------|------------------|--------------------|
| Budgeted sales (units)..... | 20,000 | 50,000 | 30,000 | 100,000 |
| Selling price per unit..... | <u>x \$10</u> | <u>x \$10</u> | <u>x \$10</u> | <u>x \$10</u> |
| Total sales..... | <u>\$200,000</u> | <u>\$500,000</u> | <u>\$300,000</u> | <u>\$1,000,000</u> |

SCHEDULE OF EXPECTED CASH COLLECTIONS

Additional data:

- All sales are on account.
- The company collects 70% of these credit sales in the month of the sale; 25% are collected in the month following sale; and the remaining 5% are uncollectible.
- The accounts receivable balance on March 31 was \$30,000. All of this balance was collectible.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|--|------------------|------------------|------------------|------------------|
| Accounts receivable beginning balance..... | \$ 30,000 | | | \$ 30,000 |
| April sales | | | | |
| 70% x \$200,000..... | 140,000 | | | 140,000 |
| 25% x \$200,000..... | | \$ 50,000 | | 50,000 |
| May sales | | | | |
| 70% x \$500,000..... | | 350,000 | | 350,000 |
| 25% x \$500,000..... | | | \$125,000 | 125,000 |
| June sales | | | | |
| 70% x \$300,000..... | | | <u>210,000</u> | <u>210,000</u> |
| Total cash collections..... | <u>\$170,000</u> | <u>\$400,000</u> | <u>\$335,000</u> | <u>\$905,000</u> |

2. PRODUCTION BUDGET

Additional data:

- The company desires to have inventory on hand at the end of each month equal to 20% of the following month's budgeted unit sales.
- On March 31, 4,000 units were on hand.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>July</i> |
|------------------------------------|---------------|---------------|---------------|---------------|
| Budgeted sales | 20,000 | 50,000 | 30,000 | 25,000 |
| Add desired ending inventory | <u>10,000</u> | <u>6,000</u> | <u>5,000</u> | <u>3,000*</u> |
| Total needs | 30,000 | 56,000 | 35,000 | 28,000 |
| Less beginning inventory | <u>4,000</u> | <u>10,000</u> | <u>6,000</u> | <u>5,000</u> |
| Required production | <u>26,000</u> | <u>46,000</u> | <u>29,000</u> | <u>23,000</u> |

- * Budgeted sales in August = 15,000 units.
Desired ending inventory in July = 15,000 units × 20% = 3,000 units.

3. DIRECT MATERIALS BUDGET

Additional data:

- 5 pounds of material are required per unit of product.
- Management desires to have materials on hand at the end of each month equal to 10% of the following month's production needs.
- The beginning materials inventory was 13,000 pounds.
- The material costs \$0.40 per pound.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|--|-----------------|-----------------|-----------------|------------------|
| Required production in units | 26,000 | 46,000 | 29,000 | 101,000 |
| Raw materials per unit (pounds) | <u>× 5</u> | <u>× 5</u> | <u>× 5</u> | <u>× 5</u> |
| Production needs (pounds) | 130,000 | 230,000 | 145,000 | 505,000 |
| Add desired ending inventory (pounds)* | <u>23,000</u> | <u>14,500</u> | <u>11,500</u> | <u>11,500</u> |
| Total needs (pounds) | 153,000 | 244,500 | 156,500 | 516,500 |
| Less beginning inventory (pounds) | <u>13,000</u> | <u>23,000</u> | <u>14,500</u> | <u>13,000</u> |
| Raw materials to be purchased (pounds)..... | <u>140,000</u> | <u>221,500</u> | <u>142,000</u> | <u>503,500</u> |
| Cost of raw materials to be purchased at \$0.40 per pound | <u>\$56,000</u> | <u>\$88,600</u> | <u>\$56,800</u> | <u>\$201,400</u> |

- * For June: 23,000 units produced in July × 5 pounds per unit = 115,000 pounds;
115,000 pounds × 10% = 11,500 pounds

SCHEDULE OF EXPECTED CASH DISBURSEMENTS FOR MATERIAL

Additional data:

- Half of a month’s purchases are paid for in the month of purchase; the other half is paid for in the following month.
- No discounts are given for early payment.
- The accounts payable balance on March 31 was \$12,000.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|--|-----------------|-----------------|-----------------|------------------|
| Accounts payable beginning balance | \$12,000 | | | \$ 12,000 |
| April purchases: | | | | |
| 50% × \$56,000..... | 28,000 | | | 28,000 |
| 50% × \$56,000..... | | \$28,000 | | 28,000 |
| May purchases: | | | | |
| 50% × \$88,600..... | | 44,300 | | 44,300 |
| 50% × \$88,600..... | | | \$44,300 | 44,300 |
| June purchases: | | | | |
| 50% × \$56,800..... | | | <u>28,400</u> | <u>28,400</u> |
| Total cash disbursements for materials | <u>\$40,000</u> | <u>\$72,300</u> | <u>\$72,700</u> | <u>\$185,000</u> |

4. DIRECT LABOR BUDGET

Additional data:

- Each unit produced requires 0.05 hour of direct labor.
- Each hour of direct labor costs the company \$10.
- Management fully adjusts the workforce to the workload each month.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|
| Required production | 26,000 | 46,000 | 29,000 | 101,000 |
| Direct labor-hours per unit..... | <u>x 0.05</u> | <u>x 0.05</u> | <u>x 0.05</u> | <u>x 0.05</u> |
| Total direct labor–hours needed | 1,300 | 2,300 | 1,450 | 5,050 |
| Direct labor cost per hour..... | <u>x \$10</u> | <u>x \$10</u> | <u>x \$10</u> | <u>x \$10</u> |
| Total direct labor cost..... | <u>\$13,000</u> | <u>\$23,000</u> | <u>\$14,500</u> | <u>\$50,500</u> |

Note: Many companies do not fully adjust their direct labor workforce every month and in such companies direct labor behaves more like a fixed cost, with additional cost if overtime is necessary.

5. MANUFACTURING OVERHEAD BUDGET

Additional data:

- Variable manufacturing overhead is \$20 per direct labor-hour.
- Fixed manufacturing overhead is \$50,500 per month. This includes \$20,500 in depreciation, which is not a cash outflow.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|---|-----------------|-----------------|-----------------|------------------|
| Budgeted direct labor-hours | 1,300 | 2,300 | 1,450 | 5,050 |
| Variable manufacturing overhead rate..... | <u>x \$20</u> | <u>x \$20</u> | <u>x \$20</u> | <u>x \$20</u> |
| Variable manufacturing overhead | \$26,000 | \$46,000 | \$29,000 | \$101,000 |
| Fixed manufacturing overhead..... | <u>50,500</u> | <u>50,500</u> | <u>50,500</u> | <u>151,500</u> |
| Total manufacturing overhead..... | 76,500 | 96,500 | 79,500 | 252,500 |
| Less depreciation | <u>20,500</u> | <u>20,500</u> | <u>20,500</u> | <u>61,500</u> |
| Cash disbursements for manufacturing overhead | <u>\$56,000</u> | <u>\$76,000</u> | <u>\$59,000</u> | <u>\$191,000</u> |

6. ENDING FINISHED GOODS INVENTORY BUDGET

Additional data:

- Royal Company uses absorption costing in its budgeted income statement and balance sheet.
- Manufacturing overhead is applied to units of product on the basis of direct labor-hours.
- The company has no work in process inventories.

Computation of absorption unit product cost:

| | <i>Quantity</i> | <i>Cost</i> | <i>Total</i> |
|-----------------------------|-----------------|-------------------|---------------|
| Direct materials | 5 pounds | \$0.40 per pound | \$2.00 |
| Direct labor | 0.05 hours | \$10.00 per hour | 0.50 |
| Manufacturing overhead..... | 0.05 hours | \$50.00 per hour* | <u>2.50</u> |
| Unit product cost | | | <u>\$5.00</u> |

$$\begin{aligned}
 * \text{ Predetermined overhead rate} &= \frac{\text{Total manufacturing overhead}}{\text{Total direct labor hours}} \\
 &= \frac{\$252,500}{5,050 \text{ hours}} = \$50.00 \text{ per hour}
 \end{aligned}$$

Budgeted ending finished goods inventory:

| | |
|--|-----------------|
| Ending finished goods inventory in units | 5,000 |
| Unit product cost [see above]..... | <u>x \$5</u> |
| Ending finished goods inventory in dollars | <u>\$25,000</u> |

7. SELLING AND ADMINISTRATIVE EXPENSE BUDGET

Additional data:

- Variable selling and administrative expenses are \$0.50 per unit *sold*.
- Fixed selling and administrative expenses are \$70,000 per month and include \$10,000 in depreciation.

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|---|-----------------|-----------------|-----------------|------------------|
| Budgeted sales in units | 20,000 | 50,000 | 30,000 | 100,000 |
| Variable selling and administrative expense per unit | <u>x \$0.50</u> | <u>x \$0.50</u> | <u>x \$0.50</u> | <u>x \$0.50</u> |
| Variable selling and administrative expense | \$10,000 | \$25,000 | \$15,000 | \$ 50,000 |
| Fixed selling and administrative expense | <u>70,000</u> | <u>70,000</u> | <u>70,000</u> | <u>210,000</u> |
| Total selling and administrative expense | 80,000 | 95,000 | 85,000 | 260,000 |
| Less depreciation | <u>10,000</u> | <u>10,000</u> | <u>10,000</u> | <u>30,000</u> |
| Cash disbursements for selling and administrative expenses..... | <u>\$70,000</u> | <u>\$85,000</u> | <u>\$75,000</u> | <u>\$230,000</u> |

8. CASH BUDGET

The cash budget is divided into four sections:

1. Cash receipts section lists all cash inflows excluding cash received from financing;
2. Cash disbursements section consists of all cash payments excluding repayments of principal and interest;
3. Cash excess or deficiency section determines if the company will need to borrow money or if it will be able to repay funds previously borrowed; and
4. Financing section details the borrowings and repayments projected to take place during the budget period.

Additional data:

1. A line of credit is available at a local bank that allows the company to borrow up to \$75,000.
 - a. All borrowing occurs at the beginning of the month, and all repayments occur at the end of the month.
 - b. The interest rate is 1% per month.
 - c. The company does not have to make any payments until the end of the quarter.

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2. Royal Company desires a cash balance of at least \$30,000 at the end of each month. The cash balance at the beginning of April was \$40,000.
3. Cash dividends of \$51,000 are to be paid to stockholders in April.
4. Equipment purchases of \$143,700 are scheduled for May and \$48,800 for June. This equipment will be installed and tested during the second quarter and will not become operational until July, when depreciation charges will commence.

CASH BUDGET

*Royal Company
Cash Budget
For the Quarter Ending June 30*

| | <i>April</i> | <i>May</i> | <i>June</i> | <i>Quarter</i> |
|--|------------------|------------------|------------------|------------------|
| Cash balance, beginning..... | \$ 40,000 | \$ 30,000 | \$ 30,000 | \$ 40,000 |
| Add receipts: | | | | |
| Cash collections [TM 8-5]..... | <u>170,000</u> | <u>400,000</u> | <u>335,000</u> | <u>905,000</u> |
| Total cash available..... | <u>210,000</u> | <u>430,000</u> | <u>365,000</u> | <u>945,000</u> |
| Less disbursements: | | | | |
| Direct materials | 40,000 | 72,300 | 72,700 | 185,000 |
| Direct labor..... | 13,000 | 23,000 | 14,500 | 50,500 |
| Manufacturing overhead | 56,000 | 76,000 | 59,000 | 191,000 |
| Selling & administrative..... | 70,000 | 85,000 | 75,000 | 230,000 |
| Equipment purchases | 0 | 143,700 | 48,800 | 192,500 |
| Dividends | <u>51,000</u> | <u>0</u> | <u>0</u> | <u>51,000</u> |
| Total disbursements..... | <u>230,000</u> | <u>400,000</u> | <u>270,000</u> | <u>900,000</u> |
| Excess (deficiency) of cash available over disbursements..... | <u>(20,000)</u> | <u>30,000</u> | <u>95,000</u> | <u>45,000</u> |
| Financing: | | | | |
| Borrowings | 50,000 | 0 | 0 | 50,000 |
| Repayments..... | 0 | 0 | (50,000) | (50,000) |
| Interest* | <u>0</u> | <u>0</u> | <u>(2,000)</u> | <u>(2,000)</u> |
| Total financing..... | <u>50,000</u> | <u>0</u> | <u>(52,000)</u> | <u>(2,000)</u> |
| Cash balance, ending..... | <u>\$ 30,000</u> | <u>\$ 30,000</u> | <u>\$ 43,000</u> | <u>\$ 43,000</u> |

* \$50,000 × 1% × 3 = \$2,000.

9. BUDGETED INCOME STATEMENT

*Royal Company
Budgeted Income Statement
For the Quarter Ending June 30*

| | |
|--|-------------------------|
| Net sales [see below] | \$950,000 |
| Cost of goods sold [see below] | <u>500,000</u> |
| Gross margin..... | 450,000 |
| Selling & administrative expenses..... | <u>260,000</u> |
| Net operating income | 190,000 |
| Interest expense..... | <u>2,000</u> |
| Net income | <u><u>\$188,000</u></u> |

Computation of net sales:

| | |
|--------------------------------------|--------------------------|
| Sales | \$1,000,000 |
| Less uncollectible amounts (5%)..... | <u>50,000</u> |
| Net sales | <u><u>\$ 950,000</u></u> |

Computation of cost of goods sold:

| | |
|-----------------------------|-------------------------|
| Budgeted sales (units)..... | 100,000 |
| Unit product cost | <u> x \$5</u> |
| Cost of goods sold | <u><u>\$500,000</u></u> |

10. BEGINNING BALANCE SHEET

*Royal Company
Balance Sheet
March 31*

| | | | |
|---|------------------|-----|--------------------|
| Current assets: | | | |
| Cash..... | \$ 40,000 | (a) | |
| Accounts receivable..... | 30,000 | (b) | |
| Raw materials inventory..... | 5,200 | (c) | |
| Finished goods inventory..... | <u>20,000</u> | (d) | \$ 95,200 |
| Plant and equipment: | | | |
| Land..... | 400,000 | (e) | |
| Buildings and equipment..... | 1,610,000 | (f) | |
| Accumulated depreciation..... | <u>(750,000)</u> | (g) | <u>1,260,000</u> |
| Total assets..... | | | <u>\$1,355,200</u> |
| Liabilities: | | | |
| Accounts payable..... | | | \$ 12,000 (h) |
| Stockholders' equity: | | | |
| Common stock..... | \$ 200,000 | (i) | |
| Retained earnings..... | <u>1,143,200</u> | (j) | <u>1,343,200</u> |
| Total liabilities and stockholders' equity..... | | | <u>\$1,355,200</u> |

- | | |
|-------------------------------|--------------------------------|
| (a) See Cash Budget | (f) Given |
| See Schedule of Expected cash | |
| (b) collections | (g) Given |
| | See Schedule of Expected Cash |
| (c) Given | (h) Disbursements for Material |
| (d) Given | (i) Given |
| (e) Given | (j) Given |

BUDGETED BALANCE SHEET

*Royal Company
Budgeted Balance Sheet
June 30*

| | | | |
|---|------------------|-----|--------------------|
| Current assets: | | | |
| Cash..... | \$ 43,000 | (a) | |
| Accounts receivable..... | 75,000 | (b) | |
| Raw materials inventory..... | 4,600 | (c) | |
| Finished goods inventory..... | <u>25,000</u> | (d) | \$ 147,600 |
| Plant and equipment: | | | |
| Land..... | 400,000 | (e) | |
| Buildings and equipment..... | 1,802,500 | (f) | |
| Accumulated depreciation..... | <u>(841,500)</u> | (g) | <u>1,361,000</u> |
| Total assets..... | | | <u>\$1,508,600</u> |
| Liabilities: | | | |
| Accounts payable..... | | | \$ 28,400 (h) |
| Stockholders' equity: | | | |
| Common stock..... | \$ 200,000 | (i) | |
| Retained earnings..... | <u>1,280,200</u> | (j) | <u>1,480,200</u> |
| Total liabilities and stockholders' equity..... | | | <u>\$1,508,600</u> |

- | | |
|--------------------------------------|--|
| (a) | (f) \$1,610,000+ \$143,700+ \$48,800 |
| (b) \$300,000 sales × 25% | (g) \$750,000 + \$61,500 + \$30,000 |
| (c) 11,500 pounds × \$0.40 per pound | (h) \$56,800 purchases × 50% |
| (d) | (i) |
| (e) | (j) \$1,143,200 + \$188,000 – \$51,000 |