

**Convex Mechanical Supplies produces a product with the following costs as of July 1, 20X1:**

Material .....	\$ 6
Labor .....	4
Overhead .....	<u>2</u>
	\$12

Beginning inventory at these costs on July 1 was 5,000 units. From July 1 to December 1, Convex produced 15,000 units. These units had a material cost of \$10 per unit. The costs for labor and overhead were the same. Convex uses FIFO inventory accounting.

Assuming that Convex sold 17,000 units during the last six months of the year at \$20 each, what would gross profit be? What is the value of ending inventory?

**Solution:**

**Convex Mechanical Supplies**

Sales (17,000 @ \$20)	\$340,000
Cost of goods sold:	
Old inventory:	
Quantity (units) .....	5,000
Cost per unit .....	<u>\$ 12</u>
Total .....	\$ 60,000
New inventory:	
Quantity (units) .....	12,000
Cost per unit .....	<u>\$ 16</u>
Total .....	<u>\$192,000</u>
Total cost of goods sold .....	<u>\$252,000</u>
Gross profit.....	<u>\$ 88,000</u>

Value of ending  
inventory:

Beginning inventory

(5,000 \$12) ..... \$ 60,000

+ Total production

(15,000 \$16) ..... \$240,000

Total inventory

available for sale ..... \$300,000

– Cost of goods sold.....

\$252,000

Ending inventory.....

\$ 48,000

or

3,000 units \$16 = \$48,000

**Archer Electronics Company's actual sales and purchases for April and May are shown here, along with forecast sales and purchases for June through September.**

	<b>Sales</b>	<b>Purchases</b>
April (actual) .....	\$370,000	\$155,000
May (actual).....	350,000	145,000
June (forecast) .....	325,000	145,000
July (forecast) .....	325,000	205,000
August (forecast) .....	340,000	225,000
September (forecast).....	380,000	220,000

The company makes 20 percent of its sales for cash and 80 percent on credit. Of the credit sales, 50 percent are collected in the month after the sale, and 50 percent are collected two months later. Archer pays for 20 percent of its purchases in the month after purchase and 80 percent two months after.

Labor expense equals 15 percent of the current month's sales. Overhead expense equals \$12,500 per month. Interest payments of \$32,500 are due in June and September. A cash dividend of \$52,500 is scheduled to be paid in June. Tax payments of \$25,500 are due in June and September. There is a scheduled capital outlay of \$350,000 in September.

Archer Electronics' ending cash balance in May is \$22,500. The minimum desired cash balance is \$10,500. Prepare a schedule of monthly cash receipts, monthly cash payments, and a complete monthly cash budget with borrowing and repayments for June through September. The maximum desired cash balance is \$50,500. Excess cash (above \$50,500) is used to buy marketable securities. Marketable securities are sold before borrowing funds in case of a cash shortfall (less than \$10,500).

**4-26. Solution:**

**Archer Electronics**  
***Cash Receipts Schedule***

		<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>
	Sales	\$370,000	\$350,000	\$ 325,000	\$325,000	\$340,000	\$380,000
+	Cash Sales (20%)	74,000	70,000	65,000	65,000	68,000	76,000
	Credit Sales (80%)	296,000	280,000	260,000	260,000	272,000	304,000
+	Collections (month after sale) 50%		148,000	140,000	130,000	130,000	136,000
+	Collections (second month after sale) 50%			<u>148,000</u>	<u>140,000</u>	<u>130,000</u>	<u>130,000</u>
	Total cash receipts			\$353,000	\$335,000	\$328,000	\$342,000

**4-26. (Continued)****Archer Electronics**  
***Cash Payments Schedule***

	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>
Purchases	\$155,000	\$145,000	\$145,000	\$205,000	\$225,000	\$220,000
Payments (month after purchase—20%)		31,000	29,000	29,000	41,000	45,000
Payments (second month after purchase—80%)			124,000	116,000	116,000	164,000
Labor expense (15% of sales)			48,750	48,750	51,000	57,000
Overhead			12,500	12,500	12,500	12,500
Interest payments			32,500			32,500
Cash dividend			52,500			
Taxes			25,500			25,500
Capital outlay						350,000
Total cash payments			\$324,750	\$206,250	\$220,500	\$686,500

#### 4-26. (Continued)

##### Archer Electronics Cash Budget

	June	July	August	September
Cash receipts .....	\$353,000	\$335,000	\$328,000	\$342,000
Cash payments .....	324,750	206,250	220,500	686,500
Net cash flow.....	28,250	128,750	107,500	(344,500)
Beginning cash balance.....	22,500	50,500	50,500	50,500
Cumulative cash balance.....	50,750	179,250	158,000	(294,000)
Monthly borrowing (or repayment) .....	--	--	--	*68,000
Cumulative loan balance.....	--	--	--	68,000
Marketable securities purchased .....	250	128,750	107,500	--
(Sold)		--	--	(236,500)
Cumulative marketable securities .....	250	129,000	236,500	--
Ending cash balance.....	50,500	50,500	50,500	10,500

\*Cumulative Marketable Sec. (Aug) \$236,500  
 Cumulative Cash Balance (Sept) -294,000  
 Required (ending) Cash Balance -10,500  
 Monthly Borrowing -\$68,000

Owen's Electronics has nine operating plants in seven Southwestern states. Sales for last year were \$100 million, and the balance sheet at year-end is similar in percentage of sales to that of previous years (and this will continue in the future). All assets (including fixed assets) and current liabilities will vary directly with sales. The firm is working at full capacity.

<b>Balance Sheet</b> <b>(in \$ millions)</b>			
<b>Assets</b>		<b>Liabilities and Stockholders' Equity</b>	
Cash.....	\$ 7	Accounts payable .....	\$20
Accounts receivable .....	25	Accrued wages .....	7
Inventory .....	<u>28</u>	Accrued taxes .....	<u>13</u>
Current assets .....	\$60	Current liabilities .....	\$40
Fixed assets .....	<u>45</u>	Notes payable .....	15
		Common stock.....	20
		Retained earnings .....	<u>30</u>
		Total liabilities and	
Total assets.....	<u>\$105</u>	stockholders' equity .....	<u>\$105</u>

Owen's has an after-tax profit margin of 10 percent and a dividend payout ratio of 45 percent.

If sales grow by 20 percent next year, determine how many dollars of new funds are needed to finance the growth.

**4-27. Solution:**

**Owen's Electronics**

**At Full Capacity**

Spontaneous Assets = Current Assets + Fixed Assets

Spontaneous Liabilities = Acc. Pay. + Accrued Wages & Taxes

$$\text{Required New Funds} = \frac{A}{S}(\Delta S) - \frac{L}{S}(\Delta S) - PS_2(1 - D)$$

$$\Delta S = (20\%)(\$100 \text{ mil.})$$

$$\Delta S = \$20,000,000$$

$$\begin{aligned} \text{RNF (millions)} &= \frac{105}{100}(\$20,000,000) - \frac{40}{100}(\$20,000,000) - .10 \\ &\quad (\$120,000,000)(1 - .45) \end{aligned}$$

$$= 1.05(\$20,000,000) - .40(\$20,000,000) - .10(\$120,000,000)(.55)$$

$$= \$21,000,000 - \$8,000,000 - \$6,600,000$$

$$\text{RNF} = \$6,400,000$$



The Manning Company has financial statements as shown next, which are representative of the company's historical average.

The firm is expecting a 35 percent increase in sales next year, and management is concerned about the company's need for external funds. The increase in sales is expected to be carried out without any expansion of fixed assets, but rather through more efficient asset utilization in the existing store. Among liabilities, only current liabilities vary directly with sales.

Using the percent-of-sales method, determine whether the company has external financing needs, or a surplus of funds. (Hint: A profit margin and payout ratio must be found from the income statement.)

#### Income Statement

Sales .....	\$250,000
Expenses.....	<u>192,000</u>
Earnings before interest and taxes.....	\$ 58,000
Interest.....	<u>7,500</u>
Earnings before taxes .....	\$ 50,500
Taxes .....	<u>15,500</u>
Earnings after taxes .....	\$ 35,000
Dividends .....	\$ 7,000

#### Balance Sheet

Assets		Liabilities and Stockholders' Equity	
Cash.....	\$ 8,500	Accounts payable .....	\$ 26,400
Accounts receivable .....	63,000	Accrued wages .....	2,350
Inventory .....	<u>91,000</u>	Accrued taxes .....	<u>3,750</u>
Current assets .....	\$162,500	Current liabilities.....	\$ 32,500
Fixed assets .....	<u>85,000</u>	Notes payable.....	7,500
		Long-term debt.....	17,500
		Common stock .....	125,000
		Retained earnings .....	<u>65,000</u>
		Total liabilities and	
Total assets.....	<u>\$247,500</u>	stockholders' equity .....	<u>\$247,500</u>

**4-28. Solution:**

**Manning Company**

$$\text{Profit margin} = \frac{\text{Earnings after taxes}}{\text{Sales}} = \frac{\$35,000}{\$250,000} = 14\%$$

$$\text{Payout ratio} = \frac{\text{Dividends}}{\text{Earnings}} = \frac{\$7,000}{\$35,000} = 20\%$$

$$\text{Change in Sales} = 35\% \times \$250,000 = \$87,500$$

$$\text{Spontaneous Assets} = \text{Cash} + \text{Acc. Rec.} + \text{Inventory}$$

$$\text{Spontaneous Liabilities} = \text{Acc. Payable} + \text{Accrued Wages \& Taxes}$$

$$\begin{aligned} \text{RNF} &= \frac{A}{S}(\Delta S) - \frac{L}{S}(\Delta S) - \text{PS}_2(1 - D) \\ &= \frac{\$162,500}{\$250,000}(\$87,500) - \frac{\$32,500}{\$250,000}(\$87,500) - .14(\$337,500)(1 - .20) \\ &= .65(\$87,500) - .13(\$87,500) - .14(\$337,500)(.80) \\ &= \$56,875 - \$11,375 - \$37,800 \\ &= \$7,700 \end{aligned}$$

$$\text{RNF} = \$7,700$$

The firm needs \$7,700 in external funds.