

Cost terms part II

We now consider costs included in the income statements or balance sheets of service, merchandising, and manufacturing sector companies. One key distinction of costs is their classification as capitalized or noncapitalized when they are incurred:

- ◆ **Capitalized costs** are first recorded as an asset (capitalized) when they are incurred. These costs are presumed to provide future benefits to the company. Examples are costs to acquire computer equipment and motor vehicles. These costs are written off to those periods assumed to benefit from their incurrence. For example, the cost of acquiring motor vehicles is written off as an amortization expense that occurs each year of the expected useful life of the vehicle.
- ◆ **Noncapitalized costs** are recorded as expenses of the accounting period when they are incurred. Examples are salaries paid to marketing personnel and monthly rent paid for administrative offices.

These two categories of costs apply to companies in all three sectors of the economy.

COMPANIES

Service sector companies provide services or intangible products to their customers—for example, legal advice or an audit. These companies do not have any inventory of tangible product at the end of an accounting period. Examples include law firms, accounting firms, advertising agencies, and television stations. Labour costs are typically the most significant cost category, often being as high as 70% of total costs.

Exhibit 2-7 (Panel A) presents an income statement for Elliott & Partners, a law firm specializing in personal injury litigation. The customers (clients) of this law firm

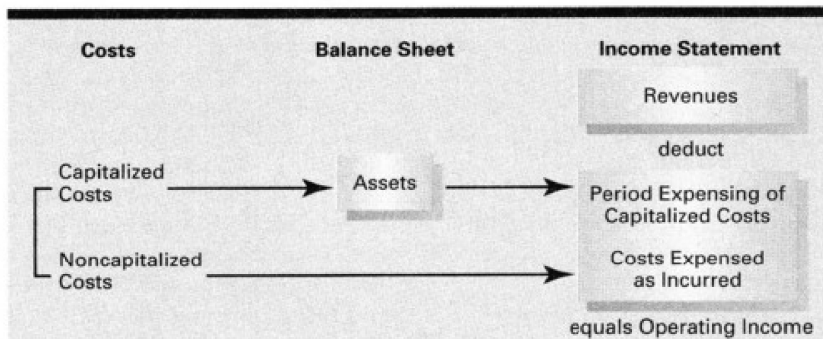
EXHIBIT 2-7

Service Sector Income Statement

PANEL A: ELLIOTT & PARTNERS—INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 19_7

Revenues		\$1,600,000
Costs:		
Salaries and wages	\$970,000	
Rent	180,000	
Amortization	105,000	
Other costs	<u>187,000</u>	<u>1,442,000</u>
Operating income		<u>\$ 158,000</u>

PANEL B: ELLIOTT & PARTNERS—RELATIONSHIP OF CAPITALIZED AND NONCAPITALIZED COSTS



receive legal advice and representation on their behalf in court and in negotiations. Salaries and wages constitute 67.3% of total operating costs (\$970,000 ÷ \$1,442,000). The operating cost line items for service companies will include costs from all areas of the value chain (production of services, marketing, and so on). There is not a line item for cost of goods sold in the income statement of Elliott & Partners. Why? Because the business sells only services or intangible products to its customers.

Exhibit 2-7 (Panel B) shows the relationship between capitalized and noncapitalized costs for service sector companies. Capitalized costs include the cost of motor vehicles, computers, and similar equipment purchased by Elliott & Partners. These costs are first capitalized and shown in the balance sheet as assets. They are presumed to provide benefits to the company over several periods. Each period part of the cost of these assets is expensed as amortization—\$105,000 in 19_7. Noncapitalized costs of Elliott, such as salaries and wages (\$970,000) and rent (\$180,000), become expenses immediately as incurred and thus are never shown as assets.

MERCHANDISING AND MANUFACTURING SECTORS

Merchandising sector companies provide tangible products they have previously purchased in the same basic form from suppliers. Merchandise purchased from suppliers but not sold at the end of an accounting period is held as inventory. The merchandising sector includes companies engaged in retailing (such as book stores or department stores), distributing, or wholesaling. **Manufacturing sector companies** provide tangible products that have been converted to a different form from that of the products purchased from suppliers. At the end of an accounting period, a manufacturer has inventory that can include direct materials, work in process, or finished goods.

Merchandising and manufacturing companies differ from service companies in their holding of inventories. The capitalized costs of merchandising and manufacturing companies can be classified as follows:

- ◆ **Capitalized inventoriable costs** (also called **inventoriable costs**) are those capitalized costs associated with the purchase of goods for resale (in the costs of merchandise inventory) or costs associated with the acquisition and conversion of materials and all other manufacturing inputs into goods for sale (in the case of manufacturing inventories).
- ◆ **Capitalized noninventoriable costs** are those capitalized costs associated with any aspect of business other than inventory.

Capitalized inventoriable costs become part of cost of goods sold in the period in which the inventory item is sold. **Operating costs** are all costs associated with generating revenues, other than cost of goods sold.¹ They include (1) the period expensing of capitalized noninventoriable costs and (2) noncapitalized costs. We now consider Prestige Bathrooms (a merchandiser) and Cellular Products (a manufacturer) to illustrate financial statements in these two sectors.

Merchandising Sector Example

Exhibit 2-8 (Panel A) presents the income statement of Prestige Bathrooms, a merchandiser of bathroom fixtures and furnishings (showers, sinks, hand towels, and so on). A merchandiser's cost of goods sold consists of the cost of goods purchased for resale adjusted for changes in the level of merchandise inventory:

$$\begin{array}{rcccl} \text{Beginning} & & & \text{Ending} & \\ \text{merchandise} & + & \text{Purchases} & - & \text{merchandise} & = & \text{Cost of} \\ \text{inventory} & & \text{of merchandise} & & \text{inventory} & & \text{goods} \\ & & & & & & \text{sold} \end{array}$$

For Prestige Bathrooms in 19_7, the corresponding amounts in Exhibit 2-8 (Panel A) are:

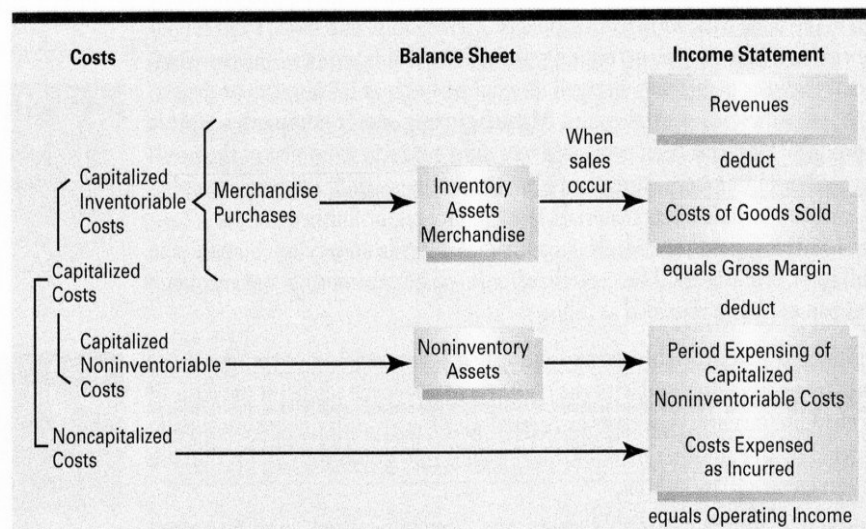
$$\text{\$ } 95,000 + \$1,100,000 - \$130,000 = \$1,065,000$$

EXHIBIT 2-8
Merchandising Sector Income Statement

PANEL A: PRESTIGE BATHROOMS—INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 19_7

Revenues		\$1,500,000
Cost of goods sold:		
Beginning merchandise inventory, January 1, 19_7	\$ 95,000	
Purchases of merchandise	<u>1,100,000</u>	
Cost of goods available for sale	1,195,000	
Ending merchandise inventory, December 31, 19_7	<u>130,000</u>	<u>1,065,000</u>
Gross margin (or gross profit)		435,000
Operating costs		<u>315,000</u>
Operating income		<u>\$ 120,000</u>

PANEL B: PRESTIGE BATHROOMS—RELATIONSHIP OF CAPITALIZED AND NONCAPITALIZED COSTS



Examples of Prestige's operating costs include the costs of designing the showroom, sales personnel, and advertising.

Exhibit 2-8 (Panel B) shows the relationship between capitalized and noncapitalized costs for merchandising companies. Merchandise purchased for resale is first shown as an asset; its cost is a capitalized inventoriable cost. As the merchandise is sold, its cost becomes an expense of that period in the form of cost of goods sold. Capitalized noninventoriable costs (such as the costs of fixtures, fittings, and computers) are shown on the balance sheet as assets and then become operating cost line items in the form of amortization (and other forms of asset write-downs) over the useful life of the asset. The \$315,000 operating costs of Prestige in Panel A include amortization on noninventory assets as well as costs expensed to the period as incurred (such as the salaries of checkout staff and monthly cost of electricity).

Subsequent chapters examine merchandising sector costs in detail. These costs include cost of goods sold, period expensing of capitalized noninventoriable costs, and costs expensed as incurred (noncapitalized costs).

Manufacturing sector example

This sector has one or more of the following types of inventory:

1. **Direct materials inventory.** Direct materials in stock and awaiting use in the manufacturing process.
2. **Work-in-process inventory.** Goods partially worked on but not yet fully completed. Also called **work-in-progress inventory**.
3. **Finished goods inventory.** Goods fully completed but not yet sold.

EXHIBIT 2-9

Income Statement and Schedule of Cost of Goods Manufactured
of Manufacturing Sector Company

PANEL A: CELLULAR PRODUCTS—INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 19_7 (IN THOUSANDS)

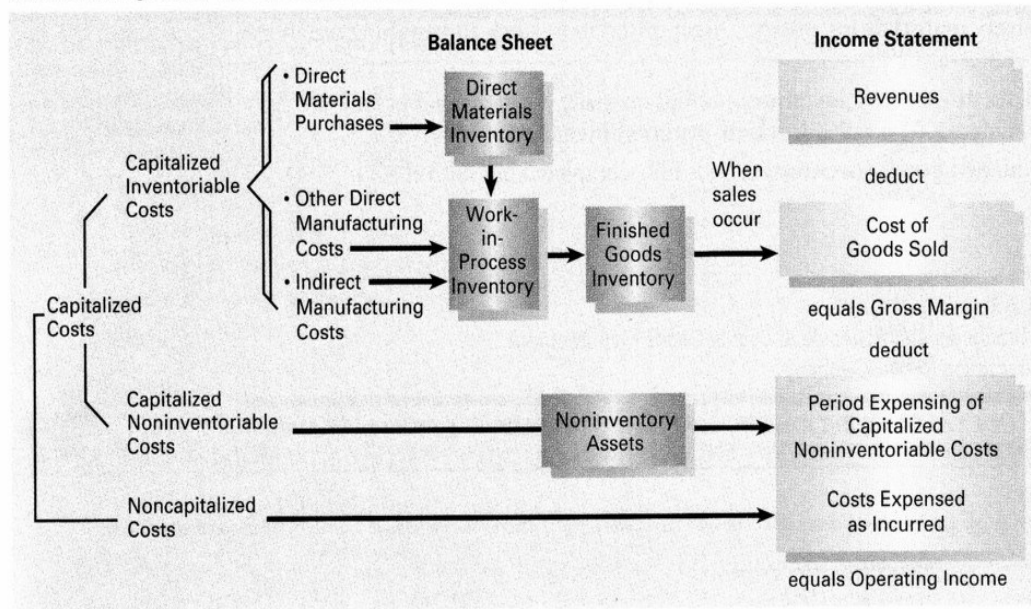
Revenues		\$210,000
Cost of goods sold:		
Beginning finished goods, January 1, 19_7	\$ 22,000	
Cost of goods manufactured (see Panel B)	104,000	
Cost of goods available for sale	126,000	
Ending finished goods, December 31, 19_7	18,000	108,000
Gross margin (or gross profit)		102,000
Operating costs		70,000
Operating income		\$ 32,000

PANEL B: CELLULAR PRODUCTS—SCHEDULE OF COST OF GOODS MANUFACTURED* FOR THE YEAR ENDED DECEMBER 31, 19_7 (IN THOUSANDS)

Direct materials:		
Beginning inventory, January 1, 19_7	\$ 11,000	
Purchases of direct materials	73,000	
Cost of direct materials available for use	84,000	
Ending inventory, December 31, 19_7	8,000	
Direct materials used		\$ 76,000
Direct manufacturing labour		17,750
Indirect manufacturing costs:		
Indirect manufacturing labour	4,000	
Supplies	1,000	
Heat, light, and power	1,750	
Amortization—plant building	1,500	
Amortization—plant equipment	2,500	
Miscellaneous	500	11,250
Manufacturing costs incurred during 19_7		105,000
Add: Beginning work-in-process inventory, January 1, 19_7		6,000
Total manufacturing costs to account for		111,000
Deduct: Ending work-in-process inventory, December 31, 19_7		7,000
Cost of goods manufactured (to income statement)		\$104,000

EXHIBIT 2-10

Manufacturing Sector Income Statement: Relationship of Capitalized and Noncapitalized Costs



In this chapter we assume that all manufacturing costs are inventoriable.²

The income statement of a manufacturer, Cellular Products, is shown in Exhibit 2-9 (Panel A). This company manufactures telephone systems for large organizations. Cost of goods sold in a manufacturing company is computed as follows:

$$\begin{array}{rclcl} \text{Beginning} & & \text{Cost of} & & \text{Ending} & & \text{Cost of} \\ \text{finished goods} & + & \text{goods} & - & \text{finished goods} & = & \text{goods} \\ \text{inventory} & & \text{manufactured} & & \text{inventory} & & \text{sold} \end{array}$$

For Cellular Products in 19_7, the corresponding amounts (in thousands, Panel A) are:

$$\$22,000 + \$104,000 - \$18,000 = \$108,000$$

Cost of goods manufactured refers to the cost of goods brought to completion, whether they were started before or during the current accounting period. In 19_7, these costs amount to \$104,000 for Cellular Products (see the schedule of cost of goods manufactured in Panel B of Exhibit 2-9). The manufacturing costs incurred during 19_7 (\$105,000) is a line item in Panel B. This item refers to the “new” direct manufacturing costs and the “new” manufacturing overhead costs that were incurred during 19_7 for all goods worked on during 19_7, regardless of whether all those goods were fully completed during this year.

Exhibit 2-10 shows cost relationships for a manufacturing sector company. The manufacturing costs of the finished goods include direct materials, other direct manufacturing costs, and indirect manufacturing costs. All these are capitalized inventoriable costs; they are assigned to work-in-process inventory or finished goods inventory until the goods are sold. Capitalized inventoriable costs include the costs of assets that facilitate the manufacturing process and (typically) become part of indirect manufacturing costs in the form of amortization. For example, the costs of the blast furnace of a steel company are first capitalized at the time of construction. These costs subsequently become part of steel inventory costs as amortization on the blast furnace is included in indirect manufacturing costs over the useful life of the blast furnace. Newcomers to cost accounting frequently assume that indirect costs such as rent, telephone, and amortization are always costs of the period in which

they are incurred and are unconnected with inventories. However, if these costs are related to manufacturing per se, they are indirect manufacturing costs and are inventoriable. Operating cost items in the income statement in Panel A of Exhibit 2-9 include (1) the expensing of capitalized noninventoriable costs (such as amortization on a fleet of delivery vehicles or amortization on computers purchased for marketing personnel) and (2) the cost of items recorded as an expense as incurred (such as the salaries of customer service representatives).

MANUFACTURING COSTS

The language of cost accounting has specific terms for manufacturing costs. Three terms in widespread use are direct materials costs, direct manufacturing labour costs, and indirect manufacturing costs.

1. **Direct materials costs** are the acquisition costs of all materials that eventually become part of the cost object (say, units finished or in process), and that can be traced to the cost object in an economically feasible way. Acquisition costs of direct materials include freight-in (inward delivery) charges, sales taxes, and custom duties.
2. **Direct manufacturing labour costs** include the compensation of all manufacturing labour that is specifically identified with the cost object (say, units finished or in process), and that can be traced to the cost object in an economically feasible way. Examples include wages and fringe benefits paid to machine operators and assembly line workers.
3. **Indirect manufacturing costs** are all manufacturing costs considered to be part of the cost object (say, units finished or in process), but that cannot be individually traced to that cost object in an economically feasible way. Examples include power, supplies, indirect materials, indirect manufacturing labour, plant rent, plant insurance, property taxes on plants, plant amortization, and the compensation of plant managers. Other terms for this cost category include **manufacturing overhead costs** and **factory overhead costs**. We use *indirect manufacturing costs* and *manufacturing overhead costs* interchangeably in this book.

Three-Part and Two-Part Cost Classifications

Manufacturing cost accounting systems vary among companies. Some use a three-part classification of manufacturing costs; others use a two-part classification:

THREE-PART CLASSIFICATION	TWO-PART CLASSIFICATION
◆ Direct materials costs	◆ Direct materials costs
◆ Direct manufacturing labour costs	◆ Indirect manufacturing costs
◆ Indirect manufacturing costs	

Accounting systems of organizations often change over time. For example, a company may change from the three-part classification to the two-part classification if direct manufacturing labour costs become immaterial in amount because of increased automation. Other alternatives are also available. A company may change from the three-part classification to one with two direct cost categories and multiple individual manufacturing overhead cost categories. Managers will choose the classification of costs that best helps them in their planning, control, and decision-making.

PROBLEM

Campbell Company is a metal- and wood-cutting manufacturer, selling products to the home construction market. Consider the following data for the year 19_7:

Sandpaper	\$ 2,000 ✓
Materials-handling costs	70,000 ✓
Lubricants and coolants	5,000 ✓
Miscellaneous indirect manufacturing labour	40,000 ✓
Direct manufacturing labour	300,000 ✓
Direct materials, January 1, 19_7	40,000 ✓
Finished goods, January 1, 19_7	100,000 ✓
Finished goods, December 31, 19_7	150,000 ✓
Work in process, January 1, 19_7	10,000 ✓
Work in process, December 31, 19_7	14,000 ✓
Plant leasing costs	54,000 ✓
Amortization—plant equipment	36,000 ✓
Property taxes on plant equipment	4,000 ✓
Fire insurance on plant equipment	3,000 ✓
Direct materials purchased	460,000 ✓
Direct materials, December 31, 19_7	50,000 ✓
Revenue	1,360,000 ✓
Marketing promotions	60,000 ✓
Marketing salaries	100,000 ✓
Shipping costs	70,000 ✓
Customer service costs	100,000 ✓

REQUIRED

1. Prepare an income statement with a separate supporting schedule of cost of goods manufactured. For all manufacturing items, indicate by V or F whether each is basically a variable cost or a fixed cost (where the cost object is a product unit). If in doubt, decide on the basis of whether the total cost will change substantially over a wide range of production output.
2. Suppose that both the direct materials and plant leasing costs are tied to the production of 900,000 units. What is the unit cost for the direct materials assigned to each unit produced? What is the unit cost of the plant leasing costs? Assume that the plant leasing costs are a fixed cost.
3. Repeat the computation in requirement 2 for direct materials and plant leasing costs, assuming that the costs are being predicted for the manufacturing of 1 million units next year. Assume that the implied cost behaviour patterns persist.
4. As a management consultant, explain concisely to the president why the unit costs for direct materials did not change in requirements 2 and 3 but the unit costs for plant leasing costs did.

SOLUTION

1. **CAMPBELL COMPANY**
Income Statement for the Year Ended December 31, 19_7

Revenue		\$1,360,000
Cost of goods sold:		
Beginning finished goods, January 1, 19_7	\$ 100,000	
Cost of goods manufactured (see below)	<u>960,000</u>	
Cost of goods available for sale	1,060,000	
Ending finished goods, December 31, 19_7	<u>150,000</u>	<u>910,000</u>
Gross margin (or gross profit)		450,000
Operating costs:		
Marketing promotions	60,000	
Marketing salaries	100,000	
Distribution costs	70,000	
Customer service costs	<u>100,000</u>	<u>330,000</u>
Operating income		<u>\$ 120,000</u>

CAMPBELL COMPANY
Schedule of Cost of Goods Manufactured
For the Year Ended December 31, 19_7

Direct materials:		
Beginning inventory, January 1, 19_7	\$ 40,000	
Purchases of direct materials	<u>460,000</u>	
Cost of direct materials available for use	500,000	
Ending inventory, December 31, 19_7	<u>50,000</u>	
Direct materials used		\$450,000 (V)
Direct manufacturing labour		300,000 (V)
Indirect manufacturing costs:		
Sandpaper	\$ 2,000 (V)	
Materials-handling cost	70,000 (V)	
Lubricants and coolants	5,000 (V)	
Miscellaneous indirect manufacturing labour	40,000 (V)	
Plant leasing costs	54,000 (F)	
Amortization—plant equipment	36,000 (F)	
Property taxes on plant equipment	4,000 (F)	
Fire insurance on plant equipment	<u>3,000 (F)</u>	<u>214,000</u>
Manufacturing costs incurred during 19_7		964,000
Add: Beginning work-in-process inventory, January 1, 19_7		<u>10,000</u>
Total manufacturing costs to account for		974,000
Deduct: Ending work-in-process inventory, December 31, 19_7		<u>14,000</u>
Cost of goods manufactured (to income statement)		<u>\$960,000</u>

2. Direct materials unit cost = Direct materials used ÷ Units produced
 = \$450,000 ÷ 900,000 = \$0.50
- Plant leasing unit cost = Plant leasing costs ÷ Units produced
 = \$54,000 ÷ 900,000 = \$0.06
3. The direct materials costs are variable, so they would increase in total from \$450,000 to \$500,000 ($1,000,000 \times \$0.50$). However, their unit costs would be unaffected: $\$500,000 \div 1,000,000 \text{ units} = \0.50 .

In contrast, the plant leasing costs of \$54,000 are fixed, so they would not increase in total. However, if the plant leasing costs were assigned to units produced, the unit costs would decline from \$0.060 to \$0.054: $\$54,000 \div 1,000,000 = \0.054 .

4. The explanation would begin with the answer to requirement 3. As a consultant, you should stress that the unitizing (averaging) of costs that have different behaviour patterns can be misleading. A common error is to assume that a total unit cost, which is often a sum of variable unit costs and fixed unit costs, is an indicator that total costs change in a wholly variable way as the level of production output changes. The next chapter demonstrates the necessity for distinguishing between cost behaviour patterns. You must be especially wary about unit fixed costs. Too often, unit fixed costs are erroneously regarded as being indistinguishable from unit variable costs.

Exercises

2-25 Capitalized or noncapitalized costs. Consider the following ten cost items, three pertaining to the service sector, three to merchandising, and four to manufacturing.

SERVICE (ACCOUNTING FIRM)

1. \$200,000—cost of computers purchased
2. \$47,560—cost of monthly rental for offices
3. \$148,386—wages of secretaries

MERCHANDISING (HOME FURNISHING RETAIL STORE)

4. \$6,854—cost of bonuses to salespeople
5. \$146,540—cost of merchandise purchased for resale
6. \$3,470—electricity cost for showroom lighting

MANUFACTURING (STEEL COMPANY)

7. \$14,674,080—cost of new blast furnace
8. \$641,030—wages of production workers in steel plant
9. \$1,246,031—cost of coal to be used as material input in the manufacture of steel
10. \$460,174—cost of vehicles purchased for salespeople

REQUIRED

1. Classify each of the ten items as a capitalized or a noncapitalized cost for balance sheet and income statement reporting purposes.
2. For each capitalized cost item in requirement 1, explain why it is either a capitalized inventoriable cost or a capitalized noninventoriable cost.

2-28 Cost of goods manufactured. Consider the following account balances (in thousands) for the Canseco Company:

	Beginning of 19_7	End of 19_7
Direct materials inventory	\$22,000	\$26,000
Work-in-process inventory	21,000	20,000
Finished goods inventory	18,000	23,000
Purchases of direct materials		75,000
Direct manufacturing labour		25,000
Indirect manufacturing labour		15,000
Plant insurance		9,000
Amortization—plant building and equipment		11,000
Repairs and maintenance—plant		4,000
Marketing, distribution, and customer service costs		93,000
General and administrative costs		29,000

REQUIRED

1. Prepare a schedule of cost of goods manufactured for 19_7.
2. Revenues in 19_7 were \$300 million. Prepare the 19_7 income statement.

- 2-36 **Comprehensive problem on unit costs, product costs.** Regina Office Equipment manufactures and sells metal shelving. It began operations on January 1, 19_7. Costs incurred for 19_7 (V stands for variable; F stands for fixed) are as follows:

Direct materials used costs	\$140,000 V
Direct manufacturing labour costs	30,000 V
Plant energy costs	5,000 V
Indirect manufacturing labour costs	10,000 V
Indirect manufacturing labour costs	16,000 F
Other indirect manufacturing costs	8,000 V
Other indirect manufacturing costs	24,000 F
Marketing, distribution, and customer service costs	122,850 V
Marketing, distribution, and customer service costs	40,000 F
Administrative costs	50,000 F

Variable manufacturing costs are variable with respect to units produced. Variable marketing, distribution, and customer service costs are variable with respect to units sold.

Inventory data are as follows:

	Beginning, January 1, 19_7	Ending, December 31, 19_7
Direct materials	0 kilograms	2,000 kilograms
Work in process	0 units	0 units
Finished goods	0 units	? units

Production in 19_7 was 100,000 units. Two kilograms of direct materials are used to make one unit of finished product.

Revenues in 19_7 were \$436,800. The selling price per unit and the purchase price per kilogram of direct materials were stable throughout the year. The company's ending inventory of finished goods is carried at the average unit manufacturing costs for 19_7. Finished goods inventory, at December 31, 19_7, was \$20,970.

REQUIRED

1. Direct materials inventory, total cost, December 31, 19_7.
2. Finished goods inventory, total units, December 31, 19_7.
3. Selling price per unit, 19_7.
4. Operating income, 19_7. Show your computations.