

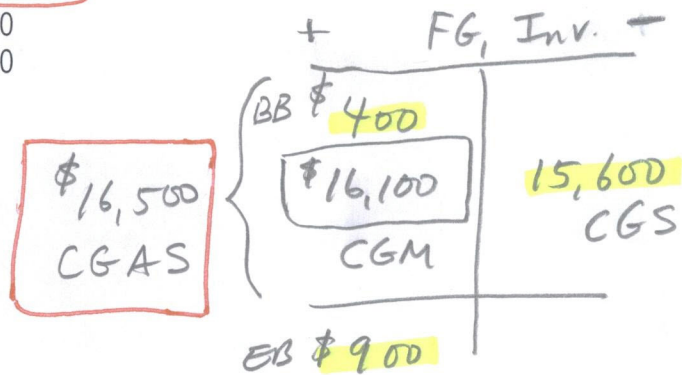
## Chapter 2 – Cost Concepts and Behavior In-Class Handout

1. Seiler Company has the following information:

|                              | <u>Work-in-Process</u> | <u>Finished Goods</u> | <u>Materials</u> |
|------------------------------|------------------------|-----------------------|------------------|
| Beginning inventory          | \$300                  | \$400                 | \$ 500           |
| Ending inventory             | 700                    | 900                   | 1,500            |
| Purchases of materials (net) | \$7,700                |                       |                  |
| Cost of Goods Sold           | \$15,600               |                       |                  |
| Manufacturing overhead       | \$4,300                |                       |                  |

What was the cost of goods available for sale for the period?

- A. \$16,800
- B. \$16,500
- C. \$16,100
- D. \$15,100



1. *Learning Objective: 02-04 Understand how material; labor; and overhead costs are added to a product at each stage of the production process.*

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- B. \$16,500**
- C. \$16,100
- D. \$15,100

$$\$400 + \text{COGM} - \$900 = \$15,600; \text{COGM} = \$16,100$$

$$\$400 + \$16,100 = \$16,500 \text{ (COGAFS)}$$

*AACSB: Analytic*

*AICPA FN: Measurement*

*Blooms: Apply*

*Difficulty: 2 Medium*

*Learning Objective: 02-04 Understand how material; labor; and overhead costs are added to a product at each stage of the production process.*

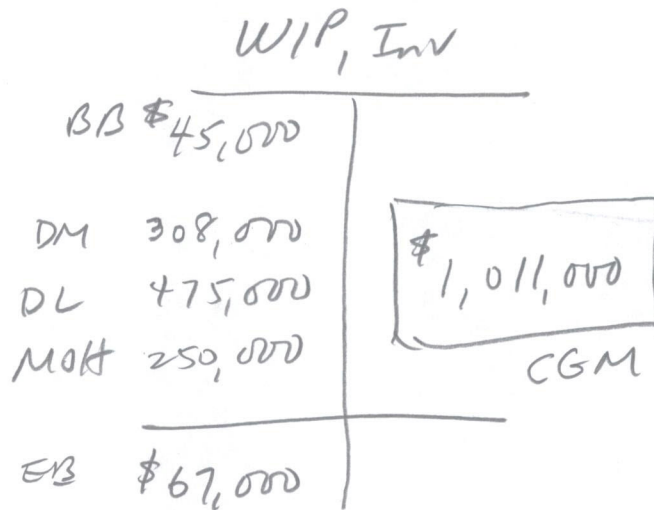
*Topic Area: Details of Manufacturing Cost Flows*

2. During the year, a manufacturing company had the following operating results:

|                                     |             |
|-------------------------------------|-------------|
| Beginning work-in-process inventory | \$ 45,000 ✓ |
| Beginning finished goods inventory  | \$190,000   |
| Direct materials used in production | \$308,000 ✓ |
| Direct labor                        | \$475,000 ✓ |
| Manufacturing overhead incurred     | \$250,000 ✓ |
| Ending work-in-process inventory    | \$ 67,000 ✓ |
| Ending finished goods inventory     | \$ 89,000   |

What is the cost of goods manufactured for the year?

- A. \$1,011,000
- B. \$1,134,000
- C. \$1,033,000
- D. \$1,112,000



*Learning Objective: 02-04 Understand how material; labor; and overhead costs are added to a product at each stage of the production process*

2. During the year, a manufacturing company had the following operating results:

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- A.** \$1,011,000
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- C. \$1,033,000
- D. \$1,112,000

$$\$45,000 + \$308,000 + \$475,000 + \$250,000 - \$67,000 = \$1,011,000$$

3. The following cost data for the month of May were taken from the records of the Paducah Manufacturing Company: (CIA adapted)

|                                   |                     |                            |
|-----------------------------------|---------------------|----------------------------|
| Depreciation on factory equipment | \$1,000 ✓           | } \$80,000<br>mfg<br>costs |
| Depreciation on sales office      | <del>X 500</del>    |                            |
| Advertising                       | <del>X 7,000</del>  |                            |
| Wages of production workers       | 28,000 ✓            |                            |
| Raw materials used                | 47,000 ✓            |                            |
| Sales salaries and commissions    | <del>X 10,000</del> |                            |
| Factory rent                      | 2,000 ✓             |                            |
| Factory insurance                 | 500 ✓               |                            |
| Materials handling                | 1,500 ✓             |                            |
| Administrative salaries           | <del>X 2,000</del>  |                            |

Based upon this information, the manufacturing cost incurred during the month was:

- A. \$78,500.
- B. \$80,000.
- C. \$80,500.
- D. \$83,000.

3. *Learning Objective: 02-02 Explain how costs are presented in financial statements*

- A. \$78,500.
- B. \$80,000.**
- C. \$80,500.
- D. \$83,000.

$$\$1,000 + \$28,000 + \$47,000 + \$2,000 + \$500 + \$1,500 = \$80,000$$

#### 4. Prepare Statements for a Manufacturing Company

The following balances are from the accounts of Todd Machining Company:

|                                  | January 1 (Beginning) | December 31 (Ending) |
|----------------------------------|-----------------------|----------------------|
| Direct materials inventory ..... | \$96,000              | \$118,000            |
| Work-in-process inventory .....  | 116,000               | 112,000              |
| Finished goods inventory .....   | 97,600                | 90,000               |

Direct materials purchased during the year amount to \$598,000, and the cost of goods sold for the year was \$2,172,400.

#### Required

Reconstruct a cost of goods sold statement and fill in the following missing data:

- Cost of direct materials used during the year.
- Cost of goods manufactured during the year.
- Total manufacturing costs incurred during the year.

(000)

| DM  |                 |
|-----|-----------------|
| 96  |                 |
| 598 | 576 DM used (a) |
| 118 |                 |

| WIP         |                    |
|-------------|--------------------|
|             | 116                |
| (c) 2,160.8 | 2,164.8 (b)<br>CGM |
|             | 112                |

| FG      |                |
|---------|----------------|
|         | 97.6           |
| 2,164.8 | 2,172.4<br>CGS |
| CGM     |                |
|         | 90             |

4. (30 min.) Prepare Statements for a Manufacturing Company: Todd Machining Company.

Todd Machining Company  
Cost of Goods Sold Statement  
For the Year Ended December 31

|   |                |                      |
|---|----------------|----------------------|
| Beginning work-in-process inventory ..... |                | \$ 116,000           |
| Manufacturing costs:                      |                |                      |
| Direct materials:                         |                |                      |
| Beginning inventory .....                 | \$ 96,000      |                      |
| Purchases .....                           | <u>598,000</u> |                      |
| Materials available .....                 | \$694,000      |                      |
| Less ending inventory .....               | <u>118,000</u> |                      |
| Direct materials used .....               |                | \$576,000 (a)*       |
| Other manufacturing costs .....           |                | <u>1,584,800</u> **  |
| Total manufacturing costs .....           |                | <u>2,160,800</u> (c) |
| Total costs of work in process .....      |                | \$ 2,276,800         |
| Less ending work in process .....         |                | <u>112,000</u>       |
| Cost of goods manufactured .....          |                | \$ 2,164,800 (b)     |
| Beginning finished goods inventory .....  |                | <u>97,600</u>        |
| Finished goods available for sale .....   |                | \$ 2,262,400         |
| Ending finished goods inventory .....     |                | <u>90,000</u>        |
| Cost of goods sold .....                  |                | <u>\$2,172,400</u>   |

\* The best approach to solving this problem is to lay out the format of the Cost of Goods Sold Statement first, then fill in the amounts known. Next find the subtotals that are possible (e.g., Finished goods available for sale). Finally, solve for letters (a), (b), and (c) where (a), (b), and (c) refer to amounts found in solutions to requirements *a*, *b*, and *c*.

\*\* Difference between total manufacturing costs and direct materials used.



## 5. Components of Full Costs

Larcker Manufacturing's cost accountant has provided you with the following information for January operations:

|   |               |                                    |
|---|---------------|------------------------------------|
| Direct materials .....                            | \$21 per unit |                                    |
| Fixed manufacturing overhead costs .....          | \$135,000     | $\div 30,000 = \$4.5/\text{unit}$  |
| Sales price .....                                 | \$79 per unit |                                    |
| Variable manufacturing overhead .....             | \$12 per unit |                                    |
| Direct labor .....                                | \$24 per unit |                                    |
| Fixed marketing and administrative costs .....    | \$117,000     | $\div 30,000 = \$3.90/\text{unit}$ |
| Units produced and sold .....                     | 30,000        |                                    |
| Variable marketing and administrative costs ..... | \$5 per unit  |                                    |

### Required

Determine each of the following:

a. Variable cost.

$$\begin{aligned} & \text{DM DL VMOH VS\&A} \\ & \$21 + 24 + 12 + 5 = \$62.00/\text{unit} \\ & \quad \times 30,000 \text{ units} \\ & \boxed{\$1,860,000} \end{aligned}$$

b. Variable manufacturing cost.

$$\begin{aligned} & \text{DM DL VMOH} \\ & \$21 + 24 + 12 = \$57.00/\text{unit} \\ & \quad \times 30,000 \text{ units} \\ & \boxed{\$1,710,000} \end{aligned}$$

c. Full absorption cost.

$$\begin{aligned} & \text{DM DL VMOH FMOH} \\ & \$21 + 24 + 12 + 4.50 = \$61.50 = \text{CGS} \\ & \quad \times 30,000 \text{ units} \\ & \boxed{\$1,845,000} \end{aligned}$$

d. Full cost.

$$\begin{aligned} & \$21 + 24 + 12 + 4.50 + 5 + \$3.90 = \$70.40 \\ & \text{DM DL VMOH FMOH VS\&A FS\&A} \times 30,000 \\ & \boxed{\$2,112,000} \end{aligned}$$

e. Profit margin.

$$\begin{aligned} & \text{Sales } \$79.00 \\ & - \text{Full Cost } 70.40 \\ & \boxed{\text{Profit Margin } \$8.60} \end{aligned}$$

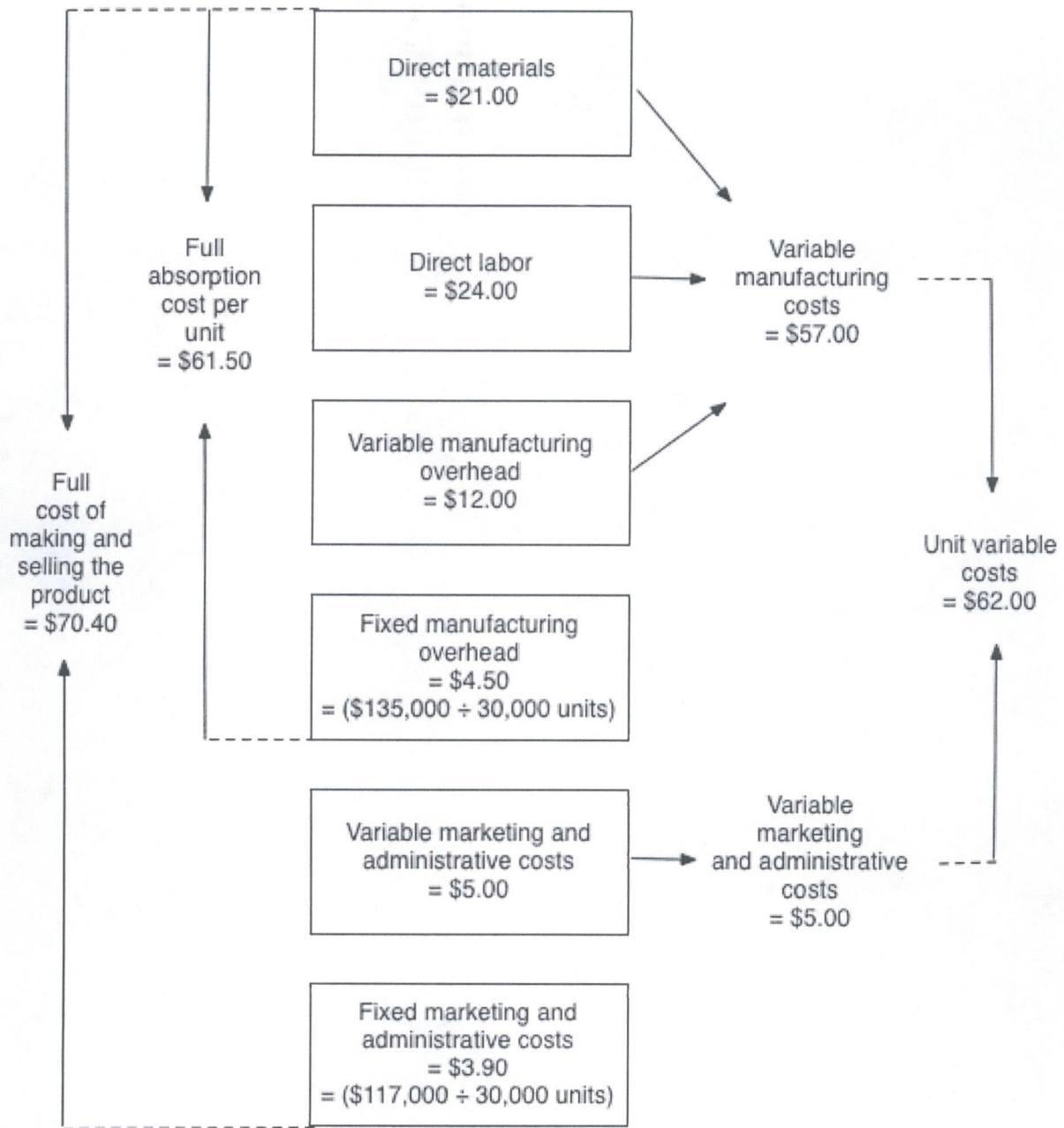
f. Gross margin.

$$\begin{aligned} & \text{Sales } \$79.00 \\ & - \text{CGS } 61.50 \\ & \boxed{\text{Gross Margin } \$17.50} \end{aligned}$$

g. Contribution margin.

$$\begin{aligned} & \text{Sales } \$79.00 \\ & - \text{VC } 62.50 \\ & \boxed{\text{Gross Margin } \$17.00} \end{aligned}$$

5. (30 min.) Components of Full Cost: Larcker Manufacturing.



- Variable cost:  $\$21.00 + \$24.00 + \$12.00 + \$5.00 = \$62.00$
- Variable manufacturing cost:  $\$21.00 + \$24.00 + \$12.00 = \$57.00$
- Full-absorption cost:  $\$21.00 + \$24.00 + \$12.00 + (\$135,000 \div 30,000 \text{ units}) = \$61.50$

**5. (continued) Components of Full Cost: Larcker Manufacturing**

- d. Full cost:  $\$21.00 + \$24.00 + \$12.00 + (\$135,000 \div 30,000 \text{ units}) + \$5.00 + (\$117,000 \div 30,000 \text{ units}) = \$70.40$
- e. Profit margin = Sales price – full cost =  $\$79.00 - \$70.40 = \$8.60$
- f. Gross margin = Sales price – full absorption cost =  $\$79.00 - \$61.50 = \$17.50$
- g. Contribution margin = Sales price – variable cost =  $\$79.00 - \$62.00 = \$17.00$

### 6. Components of Full Costs: Gross Margin and Contribution Margin Income Statements

Larcker Manufacturing's cost accountant has provided you with the following information for January operations:

|   |               |
|---|---------------|
| Direct materials .....                            | \$21 per unit |
| Fixed manufacturing overhead costs .....          | \$135,000     |
| Sales price .....                                 | \$79 per unit |
| Variable manufacturing overhead .....             | \$12 per unit |
| Direct labor .....                                | \$24 per unit |
| Fixed marketing and administrative costs .....    | \$117,000     |
| Units produced and sold .....                     | 30,000        |
| Variable marketing and administrative costs ..... | \$5 per unit  |

**Required**

Prepare:

- a. A gross margin income statement.
- b. A contribution margin income statement.

|          |                       |           |
|----------|-----------------------|-----------|
| <u>1</u> | <u>30,000</u>         |           |
| \$ 79    | 2,370,000             | Sales     |
| \$ 57    | (1,710,000)           | VCGS      |
|          | (135,000)             | FCGS      |
|          | <hr/>                 |           |
|          | 525,000               | <b>GM</b> |
| \$ 5     | (150,000)             | VS+A      |
|          | (117,000)             | FS+A      |
|          | <hr/>                 |           |
| \$       | <u><u>258,000</u></u> | NI        |

|           |   |          |           |      |           |  |       |  |
|-----------|---|----------|-----------|------|-----------|--|-------|--|
|           | <u>30,000</u>   | <u>1</u> |           |      |           |  |       |  |
| Sales     | 2,370,000   | \$ 79    |           |      |           |  |       |  |
| VC        | (1,860,000)   | [57+5]   |           |      |           |  |       |  |
|           | <hr/>   | <hr/>    |           |      |           |  |       |  |
| <b>CM</b> | 510,000   | 17       |           |      |           |  |       |  |
| FC        | <table border="0" style="margin-left: 20px;"> <tr> <td style="text-align: right;">FMOH</td> <td style="text-align: right;">(135,000)</td> </tr> <tr> <td style="text-align: right;">FS+A</td> <td style="text-align: right;">(117,000)</td> </tr> <tr> <td></td> <td style="text-align: right;"><hr/></td> </tr> </table> | FMOH     | (135,000) | FS+A | (117,000) |  | <hr/> |  |
| FMOH      | (135,000)   |          |           |      |           |  |       |  |
| FS+A      | (117,000)   |          |           |      |           |  |       |  |
|           | <hr/>   |          |           |      |           |  |       |  |
| NI        | \$ 258,000  |          |           |      |           |  |       |  |

6. (20 Min.) Gross Margin and Contribution Margin Income Statements: Larcker Manufacturing.

| Gross Margin Income Statement                         |                  | Contribution Margin Income Statement             |                  |
|---|------------------|--|------------------|
| Sales revenue(a) .....                                | \$2,370,000      | Sales revenue .....                              | \$2,370,000      |
| .....   |                  | .....  |                  |
| Variable manufacturing costs (b)                      |                  | Variable manufacturing costs .....               |                  |
| .....   | 1,710,000        | .....  | 1,710,000        |
| Fixed manufacturing overhead costs .....              |                  | Variable marketing and administrative costs..... |                  |
| .....   | <u>135,000</u>   | .....  | <u>150,000</u>   |
| .....   |                  | .....  |                  |
| Gross margin .....                                    | \$525,000        | Contribution margin .....                        | \$510,000        |
| Variable marketing and administrative costs (c) ..... | 150,000          | Fixed manufacturing overhead costs .....         | 135,000          |
| Fixed marketing and administrative costs .....        | <u>117,000</u>   | Fixed marketing and administrative costs .....   | <u>117,000</u>   |
| Operating profit.....                                 | <u>\$258,000</u> | Operating profit .....                           | <u>\$258,000</u> |

(a)  $\$79 \times 30,000 \text{ units} = \$2,370,000$

(b)  $\$57 \times 30,000 \text{ units} = \$1,710,000$ ;  $\$57 = (\$21 \text{ direct material} + \$24 \text{ direct labor} + \$12 \text{ variable manufacturing overhead})$ .

(c)  $\$5 \times 30,000 \text{ units} = \$150,000$