Chapter 6: Variable Costing

DeAnne Company produces a single product. The company's variable costing income statement for August appears below:

DeAnne Company
Income Statement
For the month ended August 31

Sales ($15 per unit) $600,000
Variable expenses:
  Variable cost of goods sold 360,000
  Variable selling expense 80,000
Total variable expenses 440,000
Contribution margin 160,000
Fixed expenses:
  Fixed manufacturing 105,000
  Fixed selling and administrative 35,000
Total fixed expenses 140,000
Net operating income $20,000

The company produced 35,000 units in August and the beginning inventory consisted of 8,000 units. Variable production costs per unit and total fixed costs have remained constant over the past several months.

102. The value of the company's inventory on August 31 under the absorption costing method is:
A. $27,000
B. $42,000
C. $36,000
D. $47,000
102. The value of the company’s inventory on August 31 under the absorption costing method is:
A. $27,000
B. $42,000
C. $36,000
D. $47,000

Units sold = $600,000 + $15 per unit = 40,000 units

Units in beginning inventory + Units produced = Units sold + Units in ending inventory
8,000 units + 35,000 units = 40,000 units + Units in ending inventory
Units in ending inventory = 8,000 units + 35,000 units - 40,000 units = 3,000 units

Variable cost of goods sold ($360,000 ÷ 40,000 units) ......................... $ 9
Fixed manufacturing overhead cost ($105,000 ÷ 35,000 units) .................. 3
Absorption costing unit product cost (a) ............................................... $12
Units in ending inventory (b) ............................................................... 3,000
Value of ending inventory under absorption costing (a) × (b) .............. $36,000

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom’s: Application
Learning Objective: 06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method
Level: Hard
DeAnne Company produces a single product. The company’s variable costing income statement for August appears below:

<table>
<thead>
<tr>
<th>DeAnne Company</th>
<th>Income Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the month ended August 31</td>
<td></td>
</tr>
</tbody>
</table>

Sales ($15 per unit) .................. $600,000
Variable expenses:
  Variable cost of goods sold ........ 360,000
  Variable selling expense .......... 80,000
Total variable expenses .......... 440,000
Contribution margin ................. 160,000
Fixed expenses:
  Fixed manufacturing .......... 105,000
  Fixed selling and administrative . 35,000
Total fixed expenses ...................... 140,000
Net operating income .................. $ 20,000

The company produced 35,000 units in August and the beginning inventory consisted of 8,000 units. Variable production costs per unit and total fixed costs have remained constant over the past several months.

103. Under absorption costing, for the month ended August 31, the company would report a:
A. $20,000 profit
B. $5,000 loss
C. $35,000 profit
D. $5,000 profit

\[
\begin{array}{c|c}
\text{Inv (units)} & \text{Inv ($)} \\
8,000 & \text{Abs} \\
35,000 \text{ produced} & 40,000 \text{ sold} \\
3,000 & \text{VC} \\
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c|c}
\text{Abs} & \text{S} & \text{CGS} & \text{GP} & \text{CM} & \text{FC} & \text{NI}_{\text{Abs}} \\
S & - & - & \text{GP} & \text{CM} & - & \text{NI}_{\text{VC}} \\
\text{VC} & \text{S} & - & - & \text{FC} & \text{NI}_{\text{VC}} \\
\end{array}
\]

\[
\Delta = 5,000 \times \$3 = \$15,000
\]

\[
\begin{array}{c|c|c}
\text{NI}_{\text{Abs}} & \text{5,000} & \text{20,000} \\
\end{array}
\]
103. Under absorption costing, for the month ended August 31, the company would report a:

A. $20,000 profit
B. $5,000 loss
C. $35,000 profit
D. $5,000 profit

Variable cost of goods sold ($360,000 ÷ 40,000 units) ......................... $ 9
Fixed manufacturing overhead cost ($105,000 ÷ 35,000 units) .................. 3
Absorption costing unit product cost ....................................................... $12

Sales ($15 per unit × 40,000 units) ...................................................... $600,000
Cost of goods sold ($12 per unit × 40,000 units) .................................. 480,000
Gross margin ......................................................................................... 120,000
Selling and administrative expenses ($80,000 + $35,000) ...................... 115,000
Net operating income ........................................................................... $ 5,000

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom's: Application
Learning Objective: 06-02 Prepare income statements using both variable and absorption costing
Level: Hard
Galino Company, which has only one product, has provided the following data concerning its most recent month of operations:

Selling price ................................................. $99

Units in beginning inventory ......................... 0
Units produced ............................................. 2,900
Units sold .................................................... 2,600
Units in ending inventory ......................... 300

Variable costs per unit:
  Direct materials ........................................... $27
  Direct labor ............................................. $11
  Variable manufacturing overhead ....... $6
  Variable selling and administrative .... $7

Fixed costs:
  Fixed manufacturing overhead........ $104,400
  Fixed selling and administrative ...... $13,000

106. The total contribution margin for the month under the variable costing approach is:
   A. $124,800
   B. $49,400
   C. $20,400
   D. $143,000

\[ \begin{align*}
  \text{VC} & \quad \text{S} \\
  1 & \quad 2600 \\
  \frac{\text{VC}}{\text{CM}} & \quad \frac{1}{48} \\
  \frac{\text{VC}}{\text{FC}} & \quad \frac{1}{99} \\
  \text{NI} & \quad \frac{124,800}{\text{VC}} \\
\end{align*} \]
106. The total contribution margin for the month under the variable costing approach is:

A. $124,800
B. $49,400
C. $20,400
D. $143,000

<table>
<thead>
<tr>
<th>Direct materials</th>
<th>$27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct labor</td>
<td>11</td>
</tr>
<tr>
<td>Variable manufacturing overhead</td>
<td>6</td>
</tr>
<tr>
<td>Variable selling and administrative</td>
<td>7</td>
</tr>
<tr>
<td>Variable expense per unit</td>
<td>$51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selling price per unit</th>
<th>$99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable expense per unit</td>
<td>51</td>
</tr>
<tr>
<td>Contribution margin per unit (a)</td>
<td>$48</td>
</tr>
<tr>
<td>Units sold (b)</td>
<td>2,600</td>
</tr>
<tr>
<td>Total contribution margin (a) x (b)</td>
<td>$124,800</td>
</tr>
</tbody>
</table>

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom's: Application
Learning Objective: 06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method
Learning Objective: 06-02 Prepare income statements using both variable and absorption costing
Level: Medium
Galino Company, which has only one product, has provided the following data concerning its most recent month of operations:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price</td>
<td>$99</td>
</tr>
<tr>
<td>Units in beginning inventory</td>
<td>0</td>
</tr>
<tr>
<td>Units produced</td>
<td>2,900</td>
</tr>
<tr>
<td>Units sold</td>
<td>2,600</td>
</tr>
<tr>
<td>Units in ending inventory</td>
<td>300</td>
</tr>
</tbody>
</table>

Variable costs per unit:
- Direct materials: $27
- Direct labor: $11
- Variable manufacturing overhead: $6
- Variable selling and administrative: $7

Fixed costs:
- Fixed manufacturing overhead: $104,400
- Fixed selling and administrative: $13,000

107. The total gross margin for the month under the absorption costing approach is:

A. $49,400  
B. $18,200  
C. $73,400  
D. $124,800
107. The total gross margin for the month under the absorption costing approach is:

A. $49,400
B. $18,200
C. $73,400
D. $124,800

Unit product cost under absorption costing:

- Direct materials: $27
- Direct labor: $11
- Variable manufacturing overhead: $6
- Fixed manufacturing overhead cost ($104,400 ÷ 2,900 units produced): $36

Absorption costing unit product cost: $80

Sales ($99 per unit × 2,600 units): $257,400
Cost of goods sold ($80 per unit × 2,600 units): $208,000
Gross margin: $49,400

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom’s: Application

Learning Objective: 06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method

Learning Objective: 06-02 Prepare income statements using both variable and absorption costing

Level: Medium
Galino Company, which has only one product, has provided the following data concerning its most recent month of operations:

Selling price ........................................ $99

Units in beginning inventory ................. 0
Units produced ........................................ 2,900
Units sold .................................................. 2,600
Units in ending inventory ....................... 300

Variable costs per unit:

Direct materials ........................................ $27
Direct labor ............................................. $11
Variable manufacturing overhead ........... $6
Variable selling and administrative ...... $7

Fixed costs:

Fixed manufacturing overhead ............ $104,400
Fixed selling and administrative .......... $13,000

108. What is the total period cost for the month under the variable costing approach?
A. $31,200
B. $104,400
C. $117,400
D. $135,600

VC
Prod Cost \Rightarrow DM, DL, VMOH
Period Cost \Rightarrow FMOH, VSA, FSA

\[
104,400 + 2600 + 13,600 = 135,600
\times \frac{7}{18} = 2600
\]
108. What is the total period cost for the month under the variable costing approach?

A. $31,200
B. $104,400
C. $117,400
D. $135,600

Variable selling and administrative .......... $ 18,200
($7 per unit x 2,600 units sold).............
Fixed manufacturing overhead ............... 104,400
Fixed selling and administrative .......... 13,000
Total period costs .................................. $135,600

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom's: Application
Learning Objective: 06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method
Learning Objective: 06-02 Prepare income statements using both variable and absorption costing
Level: Hard
Galino Company, which has only one product, has provided the following data concerning its most recent month of operations:

Selling price ........................................ $99
Units in beginning inventory ................. 0
Units produced .................................. 2,900
Units sold ...................................... 2,600
Units in ending inventory ................. 300

Variable costs per unit:
- Direct materials ................................ $27
- Direct labor .................................. $11
- Variable manufacturing overhead ....... $6
- Variable selling and administrative ...... $7

Fixed costs:
- Fixed manufacturing overhead .......... $104,400
- Fixed selling and administrative ...... $13,000

109. What is the total period cost for the month under the absorption costing approach?

A. $104,400
B. $31,200
C. $13,000
D. $135,600

Absorption

Prod Cost => DM, DL, VMOH, FMOH

Period Cost => VSA, FSA

\[
\text{Period Cost} = \text{VSA, FSA} = 7 \times \frac{2600}{21000} = \frac{12200}{13000} = \frac{31200}{11000}
\]
109. What is the total period cost for the month under the absorption costing approach?
A. $104,400
B. $31,200
C. $13,000
D. $135,600

Variable selling and administrative ($7 per unit \times 2,600 units) ........................................... $18,200
Fixed selling and administrative .................................................. 13,000
Total period costs ................................................................. $31,200

AACSB: Analytic
AICPA BB: Critical Thinking
AICPA FN: Measurement
Bloom's: Application
Learning Objective: 06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method
Learning Objective: 06-02 Prepare income statements using both variable and absorption costing
Level: Hard
182. Leigh Company, which has only one product, has provided the following data concerning its most recent month of operations:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity/Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price</td>
<td>$100</td>
</tr>
<tr>
<td>Units in beginning inventory</td>
<td>300</td>
</tr>
<tr>
<td>Units produced</td>
<td>1,200</td>
</tr>
<tr>
<td>Units sold</td>
<td>1,400</td>
</tr>
<tr>
<td>Units in ending inventory</td>
<td>100</td>
</tr>
<tr>
<td>Variable costs per unit:</td>
<td></td>
</tr>
<tr>
<td>Direct materials</td>
<td>$17</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$59</td>
</tr>
<tr>
<td>Variable manufacturing overhead</td>
<td>$4</td>
</tr>
<tr>
<td>Variable selling and administrative</td>
<td>$8</td>
</tr>
<tr>
<td>Fixed costs:</td>
<td></td>
</tr>
<tr>
<td>Fixed manufacturing overhead</td>
<td>$9,600</td>
</tr>
<tr>
<td>Fixed selling and administrative</td>
<td>$1,400</td>
</tr>
</tbody>
</table>

The company produces the same number of units every month, although the sales in units vary from month to month. The company's variable costs per unit and total fixed costs have been constant from month to month.

Required:

a. What is the unit product cost for the month under variable costing?
b. What is the unit product cost for the month under absorption costing?
c. Prepare a contribution format income statement for the month using variable costing.
d. Prepare an income statement for the month using absorption costing.
e. Reconcile the variable costing and absorption costing net operating incomes for the month.
a. & b. Unit product costs

Variable costing:
- Direct materials: $17
- Direct labor: 59
- Variable manufacturing overhead: 4
- Unit product cost: $80

Absorption costing:
- Direct materials: $17
- Direct labor: 59
- Variable manufacturing overhead: 4
- Fixed manufacturing overhead: 8
- Unit product cost: $88

c. & d. Income statements

Variable costing income statement
- Sales: $140,000
- Variable expenses:
  - Variable cost of goods sold: $112,000
  - Contribution margin: 16,800
- Fixed expenses:
  - Fixed manufacturing overhead: 9,600
  - Fixed selling and administrative: 1,400
- Net operating income: $5,800

Absorption costing income statement
- Sales: $140,000
- Cost of goods sold: 123,200
- Gross margin: 16,800
- Selling and administrative expenses:
  - Variable selling and administrative: 11,200
  - Fixed selling and administrative: 1,400
- Net operating income: $4,200

e. Reconciliation

Variable costing net operating income: $5,800
Deduct fixed manufacturing overhead costs released from inventory under absorption costing: (1,600)
Absorption costing net operating income: $4,200

AACSB: Analytic; AICPA BB: Critical Thinking; AICPA FN: Measurement; Bloom's: Application; Learning Objective:
06-01 Explain how variable costing differs from absorption costing and compute unit product costs under each method; Learning Objective: 06-02 Prepare income statements using both variable and absorption costing; Learning Objective: 06-03 Reconcile net operating incomes and explain why the two amounts differ; Level: Hard