**Chapter 19 Alternative Demo Problem**

**Major Company began operations on January 1, 2021. Cost and sales information for its first two calendar years are summarized below:**

**Manufacturing costs:**

 **Direct materials $50 per unit**

 **Direct labor $25 per unit**

 **Factory overhead costs for the year:**

 **Variable overhead $10 per unit**

 **Fixed overhead $1,000,000**

**Nonmanufacturing costs:**

 **Variable selling and administrative $10 per unit**

 **Fixed selling and administrative $5,000,000**

**Production and sales data:**

 **Units produced, 2019 100,000 units**

 **Units sold, 2019 80,000 units**

 **Units in ending inventory, 2019 20,000 units**

 **Units produced, 2020 60,000 units**

 **Units sold, 2020 80,000 units**

 **Units in ending inventory, 2020 0 units**

 **Sales price per unit $500 per unit**

**Required:**

1. **Prepare an income statement for the company for 2021 under absorption costing.**
2. **Prepare an income statement for the company for 2021 under variable costing.**
3. **Prepare an income statement for the company for 2022 under absorption costing.**
4. **Prepare an income statement for the company for 2022 under variable costing.**
5. **Prepare a schedule to convert variable costing income to absorption costing income for the years 2021 and 2022.**

**Chapter 19 Solution: Alternative Demo Problem**

**Compute unit costs for 2021 under the two costing methods as follows:**

|  |  |
| --- | --- |
| **Absorption Costing** | **Variable Costing** |
| **Direct materials per unit** | **$50** | **$50** |
| **Direct labor per unit** | **25** | **25** |
| **Overhead per unit** |  |  |
|  **Variable overhead per unit** | **10** | **10** |
|  **Fixed overhead per unit \*** | **10** | **--** |
| **Total production cost per unit** | **$95** | **$85** |

**\*Fixed overhead per unit = $5,000,000 / 100,000 units = $10**

1. **Absorption costing income statement for 2021:**

|  |
| --- |
| **Major Corporation****Income Statement** **For Year Ended December 31, 2021** |
| **Sales (80,000 × $500)** | **$40,000,000** |
| **Cost of goods sold (80,000 × $95)** |  **7,600,000** |
| **Gross profit**  |  **32,400,000** |
| **Selling and administrative expenses (10 × 80,000) + 5,000,000** |  **5,800,000** |
| **Income** | **$26,600,000** |

**Chapter 19 Solution: Alternative Demo Problem Continued**

1. **Variable costing income statement for 2021:**

|  |
| --- |
| **Major Corporation****Income Statement (Contribution Format)****For Year Ended December 31, 2021** |
| **Sales (80,000 × $500)** | **$40,000,000** |
| **Variable expenses** |  |
|  **Variable production costs (80,000 × $85) $6,800,000** |  |
|  **Variable selling and administrative costs (80,000 × $10) 800,000** | **$7,600,000** |
| **Contribution margin** |  **32,400,000** |
| **Fixed expenses** |  |
|  **Fixed overhead 1,000,000** |  |
|  **Fixed selling and administrative 5,000,000** |  **6,000,000** |
| **Income** | **$26,400,000** |

**Compute unit costs for 2022 under the two costing methods as follows:**

|  |  |
| --- | --- |
| **Absorption Costing** | **Variable Costing** |
| **Direct materials per unit** | **$50** | **$50** |
| **Direct labor per unit** | **25** | **25** |
| **Overhead per unit** |  |  |
|  **Variable overhead per unit** | **10** | **10** |
|  **Fixed overhead per unit \*** | **17** | **--** |
| **Total production cost per unit** | **$101.67** | **$85** |

**\*Fixed overhead per unit = $1,000,000 / 60,000 = 16.67 rounded.**

**Chapter 19 Solution: Alternative Demo Problem Continued**

1. **Absorption costing income statement for 2022:**

|  |
| --- |
| **Major Corporation****Income Statement** **For Year Ended December 31, 2022** |
| **Sales (80,000 × $500)** | **$40,000,000** |
| **Cost of goods sold**  |  |
|  **From beginning inventory (20,000 × $95) $1,900,000** |  |
|  **Produced during the year (60,000 × $101.67) 6,100,200** |  **8,000,200** |
| **Gross profit** |  **31,999,800** |
| **Selling and administrative expenses (10 × 80,000) + 5,000,000** |  **5,800,000** |
| **Income** | **$26,199,800** |

1. **Variable costing income statement for 2022:**

|  |
| --- |
| **Major Corporation****Income Statement (Contribution Format)****For Year Ended December 31, 2022** |
| **Sales (80,000 × $500)** | **$40,000,000** |
| **Variable expenses** |  |
|  **Variable production costs (80,000 × $85) $6,800,000** |  |
|  **Variable selling and administrative costs (80,000 × $10) 800,000** | **$7,600,000** |
| **Contribution margin** |  **32,400,000** |
| **Fixed expenses** |  |
|  **Fixed overhead 1,000,000** |  |
|  **Fixed selling and administrative 5,000,000** |  **6,000,000** |
| **Income** | **$26,400,000** |

1. **Conversion of variable costing income to absorption costing income:**

|  |  |  |
| --- | --- | --- |
|  | **2021** | **2022** |
| **Variable costing income** | **$26,400,000** | **$26,400,000** |
| **Add: Fixed overhead cost deferred in ending inventory (20,000 × $10)** |  **200,000** | **0** |
| **Less: Fixed overhead cost recognized from beginning inventory (20,000 × $10)** | **0** |  **(200,000)** |
| **Absorption costing income** | **$26,600,000** | **$26,200,000** |