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Future Value with Different Compounding Periods

Sub-subject: Finance

Topic: Future Value with Different Compounding Periods

Solution:

Alexis finds the Suze Jones Grocery's revenue of \$1.9 million in the last year impressive. During that year, \$1.9 million in goods were sold, with the average product costing \$1.5. What is the revenue increase when the average product cost is \$2.5 million? Will more or fewer goods need to be sold if the revenue is expected to remain the same?

Step-by-Step Solution:

Step 1: Calculate the Number of Products Sold Last Year at \$1.5 Each

Formula:

$$\text{Number of products sold last year} = \text{Revenue} / \text{Average product cost}$$

Calculation:

$$\text{Number of products sold last year} = 1,900,000 / 1.5 = 1,266,667 \text{ products}$$

Explanation: This calculation determines how many products were sold last year given the total revenue and the average product cost.

Supporting statement: Given the revenue of \$1.9 million and an average product cost of \$1.5, the total number of products sold last year is 1,266,667.

Step 2: Calculate the Revenue if the Average Product Cost is \$2.5

Formula:

$$\text{Revenue} = \text{Number of products sold} * \text{Average product cost}$$

Calculation:

$$\text{Revenue} = 1,266,667 \text{ products} * 2.5 = 3,166,668$$

Explanation: This calculation finds the expected revenue if the average product cost were \$2.5, assuming the same number of products are sold.

Supporting statement: If the average product cost were increased to \$2.5, then the revenue would be \$3,166,668 provided the same number of products are sold.

Step 3: Determine the Number of Products Needed to Maintain the Same Revenue at \$2.5 Each

Formula:

$$\text{Number of products needed} = \text{Revenue} / \text{New average product cost}$$

Calculation:

$$\text{Number of products needed} = 1,900,000 / 2.5 = 760,000 \text{ products}$$

Explanation: This calculation determines how many products need to be sold to achieve the same \$1.9 million revenue if the average product cost is increased to \$2.5.

Supporting statement: To maintain the same \$1.9 million revenue, 760,000 products must be sold if the new average product cost is \$2.5 each.

Final Solution:

The revenue increase when the average product cost rises from \$1.5 to \$2.5 is \$1,266,668. To maintain the same \$1.9 million revenue, fewer products (760,000 products) need to be sold compared to the previous year.

