Exercise 6-12 (30 minutes)

1. Profit = Unit CM × Q - Fixed expenses $\$0 = (\$30 - \$12) \times Q - \$216,000$ $\$0 = (\$18) \times Q - \$216,000$ \$18Q = \$216,000 $Q = \$216,000 \div \18 Q = 12,000 units, or at \$30 per unit, \$360,000

Alternative solution:

Unit sales to break even = $\frac{\text{Fixed expenses}}{\text{Unit contribution margin}}$

$$=\frac{\$216,000}{\$18}=12,000$$
 units

or at \$30 per unit, \$360,000

- 2. The contribution margin is \$216,000 because the contribution margin is equal to the fixed expenses at the break-even point.
- 3. Units sold to attain = $\frac{\text{Target profit} + \text{Fixed expenses}}{\text{Unit contribution margin}}$

$$=\frac{\$90,000 + \$216,000}{\$18} = 17,000 \text{ units}$$

	Total	Unit
Sales (17,000 units × \$30 per unit)	\$510,000	\$30
Variable expenses		
(17,000 units × \$12 per unit)	204,000	12
Contribution margin	306,000	<u>\$18</u>
Fixed expenses	<u>216,000</u>	
Net operating income	<u>\$ 90,000</u>	

Exercise 6-12 (continued)

4. Margin of safety in dollar terms:

Margin of safety in dollars = Total sales - Break-even sales

Margin of safety in percentage terms:

 $\begin{array}{l} \text{Margin of safety}_{\text{percentage}} = \frac{\text{Margin of safety in dollars}}{\text{Total sales}} \\ = \frac{\$90,000}{\$90,000} = 20\% \end{array}$

$$=\frac{450,000}{$450,000}=200$$

5. The CM ratio is 60%.

Expected total contribution margin: $($500,000 \times 60\%)$	\$300,000
Present total contribution margin: $($450,000 \times 60\%)$	270,000
Increased contribution margin	<u>\$ 30,000</u>

Alternative solution:

50,000 incremental sales \times 60% CM ratio = 30,000

Given that the company's fixed expenses will not change, monthly net operating income will also increase by \$30,000.

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