Problem 12-30 (30 minutes)

1. ROI = Margin × Turnover

$$= \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$= \frac{\$360,000}{\$4,000,000} \times \frac{\$4,000,000}{\$2,000,000}$$

$$= 9\% \times 2 = 18\%$$

2. $$\text{ROI} = \frac{\$360,000}{\$4,000,000} \times \frac{\$4,000,000}{\$1,600,000}$$

=	9%	×	2.5	= 22.5%
	(Unchanged)		(Increase)	(Increase)

3. $$\text{ROI} = \frac{\$392,000}{\$4,000,000} \times \frac{\$4,000,000}{\$2,000,000}$$

=	9.8%	×	2	= 19.6%
	(Increase)		(Unchanged)	(Increase)

4. Interest is a financing expense and thus it is not used to compute net operating income.

$$\text{ROI} = \frac{\$380,000}{\$4,000,000} \times \frac{\$4,000,000}{\$2,500,000}$$

=	9.5%	×	1.6	= 15.2%
	(Increase)		(Decrease)	(Decrease)

Problem 12-30 (continued)

5. The company has a contribution margin ratio of 30% ($24 CM per unit, divided by the $80 selling price per unit). Therefore, a 20% increase in sales would result in a new net operating income of:

Sales (1.20 × $4,000,000)	$4,800,000	100 %
Less variable expenses	3,360,000	70
Contribution margin	1,440,000	30 %
Less fixed expenses	840,000	
Net operating income	$ 600,000	

$$\text{ROI} = \frac{\$600{,}000}{\$4{,}800{,}000} \times \frac{\$4{,}800{,}000}{\$2{,}000{,}000}$$

$$= \underset{\text{(Increase)}}{12.5\%} \times \underset{\text{(Increase)}}{2.4} = \underset{\text{(Increase)}}{30\%}$$

6. $$\text{ROI} = \frac{\$320{,}000}{\$4{,}000{,}000} \times \frac{\$4{,}000{,}000}{\$1{,}960{,}000}$$

$$= \underset{\text{(Decrease)}}{8\%} \times \underset{\text{(Increase)}}{2.04} = \underset{\text{(Decrease)}}{16.3\%}$$

7. $$\text{ROI} = \frac{\$360{,}000}{\$4{,}000{,}000} \times \frac{\$4{,}000{,}000}{\$1{,}800{,}000}$$

$$= \underset{\text{(Unchanged)}}{9\%} \times \underset{\text{(Increase)}}{2.22} = \underset{\text{(Increase)}}{20\%}$$