Exercise 12-8 (30 minutes)

1. ROI computations:

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

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

Division A:

$$\text{ROI} = \frac{\$600{,}000}{\$12{,}000{,}000} \times \frac{\$12{,}000{,}000}{\$3{,}000{,}000}$$

$$= 5\% \times 4 = 20\%$$

Division B:

$$\text{ROI} = \frac{\$560{,}000}{\$14{,}000{,}000} \times \frac{\$14{,}000{,}000}{\$7{,}000{,}000}$$

$$= 4\% \times 2 = 8\%$$

Division C:

$$\text{ROI} = \frac{\$800{,}000}{\$25{,}000{,}000} \times \frac{\$25{,}000{,}000}{\$5{,}000{,}000}$$

$$= 3.2\% \times 5 = 16\%$$

2.

	Division A	*Division B*	*Division C*
Average operating assets	$3,000,000	$7,000,000	$5,000,000
Required rate of return	× 14%	× 10%	× 16%
Required operating income	$ 420,000	$ 700,000	$ 800,000
Actual operating income	$ 600,000	$ 560,000	$ 800,000
Required operating income (above)	420,000	700,000	800,000
Residual income	$ 180,000	$(140,000)	$ 0

Exercise 12-8 (continued)

3. a. and b.

	Division A	*Division B*	*Division C*
Return on investment (ROI)	20%	8%	16%
Therefore, if the division is presented with an investment opportunity yielding 15%, it probably would	Reject	Accept	Reject
Minimum required return for computing residual income	14%	10%	16%
Therefore, if the division is presented with an investment opportunity yielding 15%, it probably would	Accept	Accept	Reject

If performance is being measured by ROI, both Division A and Division C probably would reject the 15% investment opportunity. These divisions' ROIs currently exceed 15%; accepting a new investment with a 15% rate of return would reduce their overall ROIs. Division B probably would accept the 15% investment opportunity, since accepting it would increase the division's overall rate of return.

If performance is measured by residual income, both Division A and Division B probably would accept the 15% investment opportunity. The 15% rate of return promised by the new investment is greater than their required rates of return of 14% and 10%, respectively, and would therefore add to the total amount of their residual income. Division C would reject the opportunity, since the 15% return on the new investment is less than its 16% required rate of return.