RESPONSIBILITY AND SEGMENT ACCOUNTING

Key Topics to Know

- Distinguish between centralized and decentralized organizations
- Responsibility accounting
- Distinguish between cost centers, profit centers and investment centers
- Distinguish between traceable and common fixed costs
- Segment income statements
  - Presentation of traceable and common fixed costs
  - Similarity to multi-product breakeven analysis in Chapter 5
  - Advantages of segment income statements
  - Use of segment margin in performance evaluation
- Return on Investment (ROI) calculations
  -

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

OR

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

OR

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

  - How to improve ROI
- Residual Income calculations
  - Residual Income is income in excess of actual operating income over the minimum required income earned on average operating assets:

    Average operating assets
    <u>X Required rate of return</u>
    = Minimum required operating income
    <u>- Actual operating income</u>
    = Residual income

  - Strengths and weaknesses of ROI and residual income as performance measures.

- Balanced scorecard
  - Set of multiple performance measures designed for continuous improvement of all key aspects of the business.
  - Divided into four areas: Innovation and learning, financial performance, internal processes and customer service
- Transfer Pricing
  - The price at with intra-company transactions are recorded
  - Three approaches:
    - Market Price
    - Negotiated Price
    - Cost

Problems

Problem #1

F Company supplied following data are for the latest year of operations:

Sales	$24,480,000
Operating income	1,738,080
Average operating assets	6,000,000
Required rate of return	16%

Required:
a) What is the division's return on investment (ROI)?
b) What is the division's residual income?

Problem #2

W Company's electronics division provided the following data are for the latest year of operations:

Sales	$14,720,000
Operating income	1,000,960
Average operating assets	4,000,000
Required rate of return	14%

Required:
a) What is the division's profit margin?
b) What is the division's turnover?
c) What is the division's ROI?
d) What is the division's residual income?

Problem #3

For last year, one division of the N Company reported operating assets of $5,000,000 and operating income of $750,000. N Company has established a target return on investment (ROI) of 14% for the division.

Required:
a) Calculate the division's ROI for the year. Did it achieve the target?
b) Assuming that operating assets for the next year increase by 10%. How much would operating income have to increase to reach the target?

Problem #4

P Company provided the following selected information about its consumer products division for the year:

Residual income	$25,000
Operating income	230,000
Desired rate on investment	14%

Required: Based on this information, calculate the company's investment amount.

Problem #5

S Company reported the following information for the year:

Sales	$880,000
Operating income	90,000
Average operating assets	475,000
Required rate of return	10%

Required: Based on this information, calculate the company's residual income for the year.

Problem #6

R Company's two operating divisions provided the following partial income statements for last year.

	Division A	Division B	R Company
Revenue	$4,650,000		$10,450,000
Operating Expenses		2,750,000	
Service department charges	340,000	290,000	
Operating Income			$1,150,000

Required: Determine the missing amounts

Multiple Choice Questions

1. In an income statement segmented by product line, a fixed expense that cannot be allocated among product lines on a cause and effect basis should be:
   a) Classified as a traceable fixed expense and not allocated.
   b) Allocated to product lines on the basis of sales dollars
   c) Allocated to product lines on the basis of segment margin
   d) Classified as a common fixed expense and not allocated.

2. A common cost that should not be assigned to a particular product on a segment income statement is:
   a) Product advertising costs.
   b) Salary of the corporate president.
   c) Direct materials costs.
   d) Product manager's salary.

3. Segment or division margin is sales less:
   a) Variable expenses.
   b) Traceable fixed expenses.
   c) Variable and common fixed expenses.
   d) Variable and traceable fixed expenses.

4. Data for June for the O Company and its two major business segments, North and South appear below:

	North	South
Revenues	$550,000	$110,000
Variable expenses	270,000	47,000
Traceable fixed expenses	88,000	21,000

   In addition, common fixed expenses totaled $145,000 and were allocated as follows: North - $73,000 and South - $72,000.

   The segment income statement in the contribution format for North would show a segment margin of:
   a) $270,000
   b) $119,000
   c) $207,000
   d) $192,000

5. M Company has two sales areas: North and South. During April, the contribution margin in the North was $90,000, or 30% of sales. The segment margin in the South was $25,000, or 10% of sales. Traceable fixed expenses were $30,000 in the North and $15,000 in the South. Total net operating income was $52,000. The variable costs for the South area were:
   a) $180,000
   b) $210,000
   c) $225,000
   d) $120,000

6. S Company has two divisions: Domestic Division and Foreign Division. The following data are for the most recent operating period:

	Domestic Division	Foreign Division
Sales	$300,000	$261,000
Variable expenses	$129,000	$83,520
Traceable fixed expenses	$102,000	$109,000
Common fixed expense	$42,000	$36,540

   The common fixed expenses have been allocated to the divisions on the basis of sales. The profit margin for the Domestic Division was:
   a) 57%
   b) 23%
   c) 9%
   d) 48%

7. Residual income is:
   a) The same as operating income
   b) The excess of operating income over the minimum operating income required
   c) The excess of the minimum operating income required over operating income on the income statement
   d) Operating income multiplied by the desired ROI

8. Which of the following is **not** a perspective used by the balanced scorecard?
   a) Financial
   b) Customer
   c) Short-term
   d) Learning and growth

9. Which of the following is a perspective used by the balanced scorecard?
   a) Net income
   b) Customer satisfaction
   c) Internal business processes
   d) Market share

10. Increasing sales increases ROI because
    a) Increases in sales translate into increases in operating income
    b) Increases in sales improves margin
    c) Increases in sales improves turnover
    d) All of the above

11. Operating assets includes
    a) All assets
    b) Only fixed assets
    c) Only assets used in generating income
    d) Only current assets

12. Residual income and ROI:
    a) Often give conflicting recommendations
    b) Always recommend the same projects
    c) Are used for different types of decision making
    d) Are both expressed in dollars

13. Which of the following is a advantage of decentralization?
    a) Fosters competition among divisions
    b) Managers do not share specialized knowledge
    c) Optimal utilization of resources
    d) Allows top managers to focus on division-level issues

14. The responsibility center in which the manager has responsibility and authority over only revenues and costs is
    a) A cost center
    b) A profit center
    c) An investment center
    d) A revenue center

15. Which of the following statements follows from the concept of controllability?
    a) A profit center manager should be evaluated based on division or segment margin, not profit margin.
    b) An investment center manager should be evaluated based on return on investment, not residual income.
    c) A profit center manager should be evaluated based on residual income, not return on investment.
    d) A cost center manager should be evaluated on costs and revenues, not just costs.

16. F Company has revenues of $1,500,000 resulting in an operating income of $105,000. Average invested assets total $750,000; the cost of capital is 10%. Return on investment is
    a) 7%
    b) 14%
    c) 10%
    d) 60%

17. A Company has an operating income of $80,000 on revenues of $1,000,000. Average invested assets are $500,000 and A Company has an 6% cost of capital. What is the profit margin?
    a) 8%
    b) 10%
    c) 6%
    d) 16%

18. Which of the following is **not** an advantage of decentralization?
    a) Allows top managers to focus on strategic issues
    b) Potential duplication of resources
    c) Allows for development of managerial expertise
    d) Managers can react quickly to local information

Solutions to Problems

Problem #1

a)

$$\frac{\text{Operating Income}}{\text{Operating assets}} = \text{ROI}$$

$$\frac{\$1{,}738{,}080}{\$6{,}000{,}000} = 28.97\%$$

b)

Operating assets	$6,000,000
Desired rate of return	14%
Target operating income	$840,000
Actual operating income	$1,738,080
Residual income	$778,080

Problem #2

a)

$$\frac{\text{Operating Income}}{\text{Sales}} = \text{Margin}$$

$$\frac{\$1{,}000{,}960}{\$14{,}720{,}000} = 6.8\%$$

b)

$$\frac{\text{Sales}}{\text{Operating assets}} = \text{Turnover}$$

$$\frac{\$14{,}720{,}000}{\$4{,}000{,}000} = 3.68$$

c)

$$\frac{\text{Operating Income}}{\text{Operating assets}} = \text{ROI}$$

$$\frac{\$1{,}000{,}960}{\$4{,}000{,}000} = 25.02\%$$

d)

Operating assets	$4,000,000
Desired rate of return	14%
Target operating income	$560,000
Actual operating income	$1,000,960
Residual income	$440,960

Problem #3

a)

Operating Income / Operating assets =	ROI
$750,000 / $5,000,000 =	15%

Yes, the division exceeded the company target.

b)

Operating assets $5,000,000 + 10%	$5,500,000
Desired rate of return	14%
Target operating income	$770,000
Actual operating income	750,000
Increase required	$20,000

Problem #4

Operating Income - Residual income / Desired ROI =	Investment
$235,000 - $25,000 / 14% =	$1,464,286

Problem #5

Net income -	Average operating assets x Desired ROI =	Residual income
$90,000 -	$475,000 x 10% =	$42,500

Problem #6

	Division A	Division B	R Company
Revenue	$4,650,000	**$5,800,000**	$10,450,000
Operating Expenses	**5,920,000**	2,750,000	**8,670,000**
Service department charges	340,000	290,000	**630,000**
Operating Income	**($1,610,000)**	**$2,760,000**	$1,150,000

Solutions to Multiple Choice Questions

1.	D
2.	B
3.	D
4.	D
5.	B
6.	B
7.	B
8.	C
9.	C
10.	A
11.	C
12.	A
13.	A
14.	B
15.	A
16.	B
17.	A
18.	B