Chapter 13--Responsibility Accounting and Transfer Pricing in Decentralized Organizations

LEARNING OBJECTIVES

LO 1	Which organizational characteristics determine whether a firm should be decentralized or centralized?
LO 2	How are decentralization and responsibility accounting related?
LO 3	What are the differences among the four primary types of responsibility centers?
LO 4	Why and how are service department costs allocated to revenue-producing departments?
LO 5	What types of transfer prices are used in organizations, and why are such prices used?
LO 6	What difficulties can be encountered by multinational companies using transfer prices?

QUESTION GRID

True/False

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x			x					
3		x		x					
4		x		x					
5	x			x					
6		x		x					
7	x			x					
8	x				x				
9	x				x				
10	x				x				
11		x			x				
12	x					x			
13		x				x			
14		x				x			
15		x				x			
16		x				x			
17	x					x			
18	x					x			
19		x				x			
20	x					x			
21	x						x		
22	x						x		
23		x				x			
24		x					x		
25	x						x		
26		x						x	
27		x						x	
28		x						x	
29		x						x	
30		x						x	

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
31		x						x	
32		x						x	
33		x						x	
34		x						x	
35		X						x	
36		X						x	
37		X						x	
38		X						x	
39		X						x	
40		X						x	
41		X							x

Completion

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x				x				
3	x				x				
4	x					x			
5	x					x			
6	x					x			
7	x					x			
8		X				x			
9	x						x		
10	x						x		
11	x							x	
12		X						x	
13		X							x

Multiple Choice

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x			x					
3	x			x					
4	x			x					
5	x			x					
6	x				x				
7	x				x				
8	x				x				
9	x				x				
10	x				x				
11	x					x			
12		X				x			
13		X				x			
14	x					x			
15		X						x	
16		X						x	
17		X						x	
18		X						x	

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
19	x							x	
20	x							x	
21		x						x	
22		x						x	
23	x							x	
24	x							x	
25	x							x	
26	x							x	
27	x							x	
28		x						x	
29	x							x	
30		x					x		
31		x						x	
32	x								x
33		x						x	
34		x						x	
35		x						x	
36		x						x	
37		x						x	
38		x						x	
39		x						x	
40		x						x	
41		x						x	
42		x						x	
43		x						x	
44		x						x	
45		x						x	
46	x						x		
47		x					x		
48	x						x		
49		x					x		
50		x					x		
51		x					x		
52	x						x		
53	x						x		
54		x					x		
55		x					x		
56	x						x		
57	x						x		
58	x						x		
59	x						x		
60	x						x		
61	x						x		
62	x						x		
63	x						x		
64	x						x		
65	x						x		
66		x					x		
67	x						x		

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
68	x						x		
69	x						x		
70		x					x		
71		x					x		
72		x					x		
73		x					x		
74		x					x		
75		x					x		
76		x					x		
77		x					x		
78		x					x		
79		x					x		
80		x					x		
81		x					x		
82		x					x		
83		x					x		
84		x					x		
85		x					x		
86		x					x		
87		x					x		
88		x					x		
89		x					x		
90		x					x		
91		x					x		
92		x					x		
93		x					x		

Short-Answer

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1		x						x	
2		x						x	
3		x						x	
4		x						x	
5		x						x	
6		x		x					
7		x				x			
8		x					x		
9		x					x		
10		x						x	

Problems

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1		x						x	
2		x						x	
3		x						x	
4		x						x	
5		x						x	
6		x						x	

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
7		x						x	
8		x						x	
9		x						x	
10		x						x	
11		x						x	
12		x						x	
13		x						x	
14		x						x	
15		x						x	
16		x						x	
17		x					x		
18		x					x		
19		x					x		

TRUE/FALSE

1. Decentralization is a transfer of authority from the bottom to the top of an organization.

   ANS: F DIF: Easy OBJ: 13-1

2. Decentralization is a transfer of authority from the top to the bottom of an organization.

   ANS: T DIF: Easy OBJ: 13-1

3. Decentralization can result in a lack of goal congruence among departments.

   ANS: T DIF: Moderate OBJ: 13-1

4. Decentralization increases the time required for decision-making.

   ANS: F DIF: Moderate OBJ: 13-1

5. Decentralization can lead to greater job enrichment and satisfaction.

   ANS: T DIF: Easy OBJ: 13-1

6. Decentralization reduces the need for effective communication among an organization's departments.

   ANS: F DIF: Moderate OBJ: 13-1

7. Decentralization means that a unit manager has the authority to make all decisions concerning that specific unit.

   ANS: F DIF: Easy OBJ: 13-1

8. A responsibility accounting system should include all revenues and costs of a division.

   ANS: F DIF: Easy OBJ: 13-2

9. A responsibility accounting system should include the revenues and costs under a division manager's control.

   ANS: T DIF: Easy OBJ: 13-2

10. Responsibility reports reflect the flow of information from operational units to top management.

    ANS: T DIF: Easy OBJ: 13-2

11. Responsibility reports at lower levels of the organization are less detailed than reports at the higher levels.

    ANS: F DIF: Moderate OBJ: 13-2

12. A manager of a cost center is evaluated solely on the basis of how well costs are controlled.

    ANS: T DIF: Easy OBJ: 13-3

13. When management by exception is employed, favorable variances should not be investigated.

ANS: F DIF: Moderate OBJ: 13-3

14. When management by exception is employed, both favorable and unfavorable variances should be investigated.

ANS: T DIF: Moderate OBJ: 13-3

15. The manager of a revenue center has the authority to establish selling prices of product.

ANS: F DIF: Moderate OBJ: 13-3

16. A profit center is typically an independent organizational unit.

ANS: T DIF: Moderate OBJ: 13-3

17. The manager of a profit center has the ability to set selling prices.

ANS: T DIF: Easy OBJ: 13-3

18. The manager of an investment center is responsible for generating revenue as well as controlling expenses

ANS: T DIF: Easy OBJ: 13-3

19. Suboptimization occurs when a manager of a cost center focuses on the goals of the cost center rather than on the goals of the organization as a whole.

ANS: T DIF: Moderate OBJ: 13-3

20. An administrative department provides services that benefit other internal units of an organization.

ANS: F DIF: Easy OBJ: 13-4

21. An administrative department provides services that benefit the entire organization.

ANS: T DIF: Easy OBJ: 13-4

22. An service department provides services that benefit other internal units of an organization.

ANS: T DIF: Easy OBJ: 13-4

23. The most theoretically correct method of allocating service department costs is the algebraic method.

ANS: T DIF: Moderate OBJ: 13-3

24. The direct method of service department cost allocation allows a partial recognition of reciprocal relationships among service departments before assigning costs to revenue-producing areas.

ANS: F DIF: Moderate OBJ: 13-4

25. The most straight-forward method of assigning service department costs to revenue-producing areas is the direct method.

ANS: T DIF: Easy OBJ: 13-4

26. Transfer prices can be used to promote goal congruence among operating segments of an organization.

ANS: T DIF: Moderate OBJ: 13-5

27. In computing a transfer price, the maximum price should be no higher than the lowest market price at which the buying segment can obtain the good or service externally.

ANS: T DIF: Moderate OBJ: 13-5

28. In computing a transfer price, the maximum price should be no higher than the highest market price at which the buying segment can obtain the good or service externally.

ANS: F DIF: Moderate OBJ: 13-5

29. In computing a transfer price, the minimum price should be no lower than the incremental costs associated with the goods plus the opportunity cost of the facilities used.

ANS: T DIF: Moderate OBJ: 13-5

30. One of the main factors to consider when using a cost-based transfer price is whether to use actual or standard costs.

ANS: T DIF: Moderate OBJ: 13-5

31. When using a negotiated transfer price, a decision must be made which market price to use.

ANS: F DIF: Moderate OBJ: 13-5

32. When using a market-based transfer price, a decision must be made which market price to use.

ANS: T DIF: Moderate OBJ: 13-5

33. When using a market-based transfer price, a decision must be made how price disputes will be handled.

ANS: F DIF: Moderate OBJ: 13-5

34. When using a negotiated transfer price, a determination must be made if comparable substitutes are available externally.

ANS: T DIF: Moderate OBJ: 13-5

35. Market based transfer prices are most effective for common high-cost and high-volume standardized services.

ANS: T DIF: Moderate OBJ: 13-5

36. Cost-based transfer prices are most effective for common high-cost and high-volume standardized services.

ANS: F DIF: Moderate OBJ: 13-5

37. Negotiated transfer prices are most appropriate customized high-volume and high-cost services.

ANS: T DIF: Moderate OBJ: 13-5

38. Market based transfer prices are most appropriate customized high-volume and high-cost services.

ANS: F DIF: Moderate OBJ: 13-5

39. Cost based transfer prices are most appropriate for low cost and low volume services.

ANS: T DIF: Moderate OBJ: 13-5

40. Negotiated transfer prices are most appropriate for low cost and low volume services.

ANS: F DIF: Moderate OBJ: 13-5

41. An advance pricing agreement can eliminate the possibility of double taxation on multinational exchanges of goods.

ANS: T DIF: Moderate OBJ: 13-6

COMPLETION

1. The transfer of authority, responsibility, and decision-making rights from the top to the bottom of an organization is referred to as _____.

ANS: decentralization

DIF: Easy OBJ: 13-1

2. In a decentralized organization, the cost objective is referred to as a _____.

ANS: responsibility center

DIF: Easy OBJ: 13-2

3. The accounting practices that are practiced by a decentralized organization are referred to as _____.

ANS: responsibility accounting

DIF: Easy OBJ: 13-2

4. A responsibility center in which a manger has only the authority to control cost is referred to as a(n) _____.

   ANS: cost center

   DIF: Easy OBJ: 13-3

5. An organizational unit whose manager is solely responsible for generating revenues is referred to as a _____.

   ANS: revenue center

   DIF: Easy OBJ: 13-3

6. A responsibility center whose manager is responsible for generating revenues and controlling expenses is referred to as a _____.

   ANS: profit center

   DIF: Easy OBJ: 13-3

7. An organizational unit whose manager is responsible for acquiring, using, and disposing of assets in order to maximize return on assets is referred to as a(n) _____.

   ANS: investment center

   DIF: Easy OBJ: 13-3

8. A situation in which managers pursue goals and objectives that are in the best interests of a particular segment rather than in the best interests of the organization as a whole is referred to as _____.

   ANS: suboptimization

   DIF: Moderate OBJ: 13-3

9. An organizational unit that provides specific tasks for other internal units is referred to as a(n)_____.

   ANS: service department

   DIF: Easy OBJ: 13-4

10. An organizational unit that performs management activities, such as personnel services, that benefit the entire organization is referred to as a(n) _____.

    ANS: administrative department

    DIF: Easy OBJ: 13-4

11. When one responsibility center uses a transfer price to transfer goods or services to another responsibility center a _____ is created.

    ANS: pseudo-profit center

    DIF: Easy OBJ: 13-5

12. Three types of transfer prices are _____, _____, and _____.

    ANS: cost based, market based, and negotiated

    DIF: Moderate OBJ: 13-5

13. A binding contract between a company and one or more national taxing authorities that provides the details of how transfer prices will be set is referred to as a(n) _____.

    ANS: advance pricing agreement

    DIF: Moderate OBJ: 13-6

MULTIPLE CHOICE

1. Which of the following is more characteristic of a decentralized than a centralized business structure?
   a. The firm's environment is stable.
   b. There is little confidence in lower-level management to make decisions.
   c. The firm grows very quickly.
   d. The firm is relatively small.

   ANS: C DIF: Easy OBJ: 13-1

2. Costs of decentralization include all of the following **except**
   a. more elaborate accounting control systems.
   b. potential costs of poor decisions.
   c. additional training costs.
   d. slow response time to changes in local conditions.

   ANS: D DIF: Easy OBJ: 13-1

3. Transfer pricing is primarily incurred in
   a. foreign corporations exporting their products.
   b. decentralized organizations.
   c. multinational corporations headquartered in the U.S.
   d. closely held corporations.

   ANS: B DIF: Easy OBJ: 13-1

4. In a decentralized company in which divisions may buy goods from one another, the transfer pricing system should be designed primarily to
   a. increase the consolidated value of inventory.
   b. allow division managers to buy from outsiders.
   c. minimize the degree of autonomy of division managers.
   d. aid in the appraisal and motivation of managerial performance.

   ANS: D DIF: Easy OBJ: 13-1

5. When the majority of authority is maintained by top management personnel, the organization is said to be
   a. centralized.
   b. decentralized.
   c. composed of cost centers.
   d. engaged in transfer pricing activities.

   ANS: A DIF: Easy OBJ: 13-1

6. What term identifies an accounting system in which the operations of the business are broken down into reportable segments, and the control function of a foreperson, sales manager, or supervisor is emphasized?
   a. responsibility accounting
   b. operations-research accounting
   c. control accounting
   d. budgetary accounting

   ANS: A DIF: Easy OBJ: 13-2

7. In a responsibility accounting system, costs are classified into categories on the basis of
   a. fixed and variable costs.
   b. prime and overhead costs.
   c. administrative and nonadministrative costs.
   d. controllable and noncontrollable costs.

   ANS: D DIF: Easy OBJ: 13-2

8. When used for performance evaluation, periodic internal reports based on a responsibility accounting system should **not**
   a. be related to the organization chart.
   b. include allocated fixed overhead.
   c. include variances between actual and budgeted controllable costs.
   d. distinguish between controllable and noncontrollable costs.

   ANS: B DIF: Easy OBJ: 13-2

9. A _____ is a document that reflects the revenues and/or costs that are under the control of a particular manager.
   a. quality audit report
   b. responsibility report
   c. performance evaluation report
   d. project report

   ANS: B DIF: Easy OBJ: 13-2

10. The cost object under the control of a manager is called a(n) _____ center.
    a. cost
    b. revenue
    c. responsibility
    d. investment

    ANS: C DIF: Easy OBJ: 13-2

11. In evaluating the performance of a profit center manager, he/she should be evaluated on
    a. all revenues and costs that can be traced directly to the unit.
    b. all revenues and costs under his/her control.
    c. the variable costs and the revenues of the unit.
    d. the same costs and revenues on which the unit is evaluated.

    ANS: B DIF: Easy OBJ: 13-3

12. If a division is set up as an autonomous profit center, then goods should **not** be transferred
    a. in at a cost-based transfer price.
    b. out at a cost-based transfer price.
    c. in or out at cost-based transfer price.
    d. to other divisions in the same company.

    ANS: B DIF: Moderate OBJ: 13-3

13. Performance evaluation measures in an organization
    a. affect the motivation of subunit managers to transact with one another.
    b. always promote goal congruence.
    c. are less motivating to managers than overall organizational goals.
    d. must be the same for all managers to eliminate suboptimization.

    ANS: A DIF: Moderate OBJ: 13-3

14. A management decision may be beneficial for a given profit center, but **not** for the entire company. From the overall company viewpoint, this decision would lead to
    a. goal congruence.
    b. centralization.
    c. suboptimization.
    d. maximization.

    ANS: C DIF: Easy OBJ: 13-3

15. A major benefit of cost-based transfers is that
    a. it is easy to agree on a definition of cost.
    b. costs can be measured accurately.
    c. opportunity costs can be included.
    d. they provide incentives to control costs.

    ANS: C DIF: Moderate OBJ: 13-5

16. An internal reconciliation account is **not** required for internal transfers based on
    a. market value.
    b. dual prices.
    c. negotiated prices.
    d. cost.

    ANS: D DIF: Moderate OBJ: 13-5

17. The most valid reason for using something other than a full-cost-based transfer price between units of a company is because a full-cost price
    a. is typically more costly to implement.
    b. does not ensure the control of costs of a supplying unit.
    c. is not available unless market-based prices are available.
    d. does not reflect the excess capacity of the supplying unit.

    ANS: B DIF: Moderate OBJ: 13-5

18. To avoid waste and maximize efficiency when transferring products among divisions in a competitive economy, a large diversified corporation should base transfer prices on
    a. variable cost.
    b. market price.
    c. full cost.
    d. production cost.

    ANS: B DIF: Moderate OBJ: 13-5

19. A transfer pricing system is also known as
    a. investment center accounting.
    b. a revenue allocation system.
    c. responsibility accounting.
    d. a charge-back system.

    ANS: D DIF: Easy OBJ: 13-5

20. The maximum of the transfer price negotiation range is
    a. determined by the buying division.
    b. set by the selling division.
    c. influenced only by internal cost factors.
    d. negotiated by the buying and selling division.

    ANS: A DIF: Easy OBJ: 13-5

21. The presence of idle capacity in the selling division may increase
    a. the incremental costs of production in the selling division.
    b. the market price for the good.
    c. the price that a buying division is willing to pay on an internal transfer.
    d. a negotiated transfer price.

    ANS: A DIF: Moderate OBJ: 13-5

22. Which of the following is a consistently desirable characteristic in a transfer pricing system?
    a. system is very complex to be the most fair to the buying and selling units
    b. effect on subunit performance measures is not easily determined
    c. system should reflect organizational goals
    d. transfer price remains constant for a period of at least two years

    ANS: C DIF: Moderate OBJ: 13-5

23. With two autonomous division managers, the price of goods transferred between the divisions needs to be approved by
    a. corporate management.
    b. both divisional managers.
    c. both divisional managers and corporate management.
    d. corporate management and the manager of the buying division.

    ANS: B DIF: Easy OBJ: 13-5

24. The minimum potential transfer price is determined by
    a. incremental costs in the selling division.
    b. the lowest outside price for the good.
    c. the extent of idle capacity in the buying division.
    d. negotiations between the buying and selling division.

    ANS: A DIF: Easy OBJ: 13-5

25. As the internal transfer price is increased,
    a. overall corporate profits increase.
    b. profits in the buying division increase.
    c. profits in the selling division increase.
    d. profits in the selling division and the overall corporation increase.

    ANS: C DIF: Easy OBJ: 13-5

26. In an internal transfer, the selling division records the event by crediting
    a. accounts receivable and CGS.
    b. CGS and finished goods.
    c. finished goods and accounts receivable.
    d. finished goods and intracompany sales.

    ANS: D DIF: Easy OBJ: 13-5

27. In an internal transfer, the buying division records the transaction by
    a. debiting accounts receivable.
    b. crediting accounts payable.
    c. debiting intracompany CGS.
    d. crediting inventory.

    ANS: B DIF: Easy OBJ: 13-5

28. Top management can preserve the autonomy of division managers and encourage an optimal level of internal transactions by
    a. selecting performance evaluation measures that are consistent with the achievement of overall corporate goals.
    b. selecting division managers who are most concerned about their individual performance.
    c. prescribing transfer prices between segments.
    d. setting up all organizational units as revenue centers.

    ANS: A DIF: Moderate OBJ: 13-5

29. To evaluate the performance of individual departments, interdepartmental transfers of a product should preferably be made at prices
    a. equal to the market price of the product.
    b. set by the receiving department.
    c. equal to fully-allocated costs of the producing department.
    d. equal to variable costs to the producing department.

    ANS: A DIF: Easy OBJ: 13-5

30. Allocating service department costs to revenue-producing departments is an alternative to
    a. responsibility accounting.
    b. the use of profit centers.
    c. the use of cost centers.
    d. a transfer pricing system.

    ANS: D DIF: Moderate OBJ: 13-4

31. External factors considered in setting transfer prices in multinational firms typically do **not** include
    a. the corporate income tax rates in host countries of foreign subsidiaries.
    b. foreign monetary exchange risks.
    c. environmental policies of the host countries of foreign subsidiaries.
    d. actions of competitors of foreign subsidiaries.

    ANS: C DIF: Moderate OBJ: 13-5

32. Corporate taxes and tariffs are particular transfer-pricing concerns of
    a. investment centers.
    b. multinational corporations.
    c. division managers.
    d. domestic corporations involved in importing foreign goods.

    ANS: B DIF: Easy OBJ: 13-6

Computer Solutions Corporation

Computer Solutions Corporation manufactures and sells various high-tech office automation products. Two divisions of Office Products Inc. are the Computer Chip Division and the Computer Division. The Computer Chip Division manufactures one product, a "super chip," that can be used by both the Computer Division and other external customers. The following information is available on this month's operations in the Computer Chip Division:

Selling price per chip	$50	
Variable costs per chip	$20	
Fixed production costs	$60,000	
Fixed SG&A costs	$90,000	
Monthly capacity	10,000	chips
External sales	6,000	chips
Internal sales	0	chips

Presently, the Computer Division purchases no chips from the Computer Chips Division, but instead pays $45 to an external supplier for the 4,000 chips it needs each month.

33. Refer to Computer Solutions Corporation. Assume that next month's costs and levels of operations in the Computer and Computer Chip Divisions are similar to this month. What is the minimum of the transfer price range for a possible transfer of the super chip from one division to the other?
    a. $50
    b. $45
    c. $20
    d. $35

    ANS: C
    $20 is the incremental internal cost of the chip.

    DIF: Moderate OBJ: 13-5

34. Refer to Computer Solutions Corporation. Assume that next month's costs and levels of operations in the Computer and Computer Chip Divisions are similar to this month. What is the maximum of the transfer price range for a possible transfer of the chip from one division to the other?
    a. $50
    b. $45
    c. $35
    d. $30

    ANS: B
    $45 is the external price paid for the chip.

    DIF: Moderate OBJ: 13-5

35. Refer to Computer Solutions Corporation. Two possible transfer prices (for 4,000 units) are under consideration by the two divisions: $35 and $40. Corporate profits would be _____ if $35 is selected as the transfer price rather than $40.
    a. $20,000 larger
    b. $40,000 larger
    c. $20,000 smaller
    d. the same

    ANS: D

    Transfer prices are for internal use only; external profits are not affected.

    DIF: Moderate OBJ: 13-5

36. Refer to Computer Solutions Corporation. If a transfer between the two divisions is arranged next period at a price (on 4,000 units of super chips) of $40, total profits in the Computer Chip division will
    a. rise by $20,000 compared to the prior period.
    b. drop by $40,000 compared to the prior period.
    c. drop by $20,000 compared to the prior period.
    d. rise by $80,000 compared to the prior period.

    ANS: D
    $(40 - 20)/unit * 4,000 units = $80,000

    DIF: Moderate OBJ: 13-5

37. Refer to Computer Solutions Corporation. Assume, for this question only, that the Computer Chip Division is selling all that it can produce to external buyers for $50 per unit. How would overall corporate profits be affected if it sells 4,000 units to the Computer Division at $45? (Assume that the Computer Division can purchase the super chip from an outside supplier for $45.)
    a. no effect
    b. $20,000 increase
    c. $20,000 decrease
    d. $90,000 increase

    ANS: C
    $5.00/unit * 4,000 units = $20,000 decrease in profit

    DIF: Moderate OBJ: 13-5

Dynamic Engine Corporation

The Motor Division of Dynamic Engine Corporation uses 5,000 carburetors per month in its production of automotive engines. It presently buys all of the carburetors it needs from two outside suppliers at an average cost of $100. The Carburetor Division of Dynamic Engine Corporation manufactures the exact type of carburetor that the Motor Division requires. The Carburetor Division is presently operating at its capacity of 15,000 units per month and sells all of its output to a foreign car manufacturer at $106 per unit. Its cost structure (on 15,000 units) is:

Variable production costs	$70
Variable selling costs	10
All fixed costs	10

Assume that the Carburetor Division would not incur any variable selling costs on units that are transferred internally.

38. Refer to Dynamic Engine Corporation. What is the maximum of the transfer price range for a transfer between the two divisions?
    a. $106
    b. $100
    c. $90
    d. $70

    ANS: B

    $100 represents the price at which the good could be obtained externally.

    DIF: Moderate OBJ: 13-5

39. Refer to Dynamic Engine Corporation. What is the minimum of the transfer price range for a transfer between the two divisions?
    a. $96
    b. $90
    c. $70
    d. $106

    ANS: A
    $96 represents the external sales price less the selling expenses that will not be incurred.

    DIF: Moderate OBJ: 13-5

40. Refer to Dynamic Engine Corporation. If the two divisions agree to transact with one another, corporate profits will
    a. drop by $30,000 per month.
    b. rise by $20,000 per month.
    c. rise by $50,000 per month.
    d. rise or fall by an amount that depends on the level of the transfer price.

    ANS: C
    Selling costs of $50,000 ($10/unit) will not be incurred.

    DIF: Moderate OBJ: 13-5

Watts Corporation

Watts Corporation produces various products used in the construction industry. The Plumbing Division produces and sells 100,000 copper fittings each month. Relevant information for last month follows:

Total sales (all external)	$250,000
Expenses (all on a unit base):	
Variable manufacturing	$0.50
Fixed manufacturing	.25
Variable selling	.30
Fixed selling	.40
Variable G&A	.15
Fixed G&A	.50
Total	$2.10

Top-level managers are trying to determine how a transfer price can be set on a transfer of 10,000 of the copper fittings from the Plumbing Division to the Bathroom Products Division.

41. Refer to Watts Corporation. A transfer price based on variable cost will be set at _____ per unit.
    a. $0.50
    b. $0.80
    c. $0.95
    d. $0.75

    ANS: C
    Variable costs = $(0.50 + 0.30 + 0.15) = $0.95

    DIF: Moderate OBJ: 13-5

42. Refer to Watts Corporation. A transfer price based on full production cost would be set at _____ per unit.
    a. $0.75
    b. $2.10
    c. $1.45
    d. $1.60

    ANS: A
    Total manufacturing costs = $(0.50 + 0.25) = $0.75

    DIF: Moderate OBJ: 13-5

43. Refer to Watts Corporation. A transfer price based on market price would be set at _____ per unit.
    a. $2.10
    b. $2.50
    c. $1.60
    d. $2.25

    ANS: B

Market Price	$250,000
External Sales	100,000 units
Price per Unit	$2.50/unit

    DIF: Moderate OBJ: 13-5

44. Refer to Watts Corporation. If the Plumbing Division is operated as an autonomous investment center and its capacity is 100,000 fittings per month, the per-unit transfer price is not likely to be below
    a. $0.75.
    b. $1.60.
    c. $2.10.
    d. $2.50.

    ANS: D

$2.50 is the price that the fitting is sold to external parties.

    DIF: Moderate OBJ: 13-5

45. A company has two divisions, A and B; each are operated as a profit center. A charges B $35 per unit for each unit transferred to B. Other data follow:

A's variable cost per unit	$30	
A's fixed costs	$10,000	
A's annual sales to B	5,000	units
A's annual sales to outsiders	50,000	units

    A is planning to raise its transfer price to $50 per unit. Division B can purchase units at $40 each from outsiders, but doing so would idle A's facilities now committed to producing units for B. Division A cannot increase its sales to outsiders. From the perspective of the company as a whole, from whom should Division B acquire the units, assuming B's market is unaffected?
    a. outside vendors
    b. Division A, but only at the variable cost per unit
    c. Division A, but only until fixed costs are covered, then should purchase from outside vendors
    d. Division A, in spite of the increased transfer price

    ANS: D

Since Division A cannot increase its sales to outsiders, it would not be producing the units sold to Division B. Additionally, Division B would be spending an additional $10 per unit from an outside source; this would reduce external profits.

    DIF: Moderate OBJ: 13-5

46. A service department includes which of the following?

	Payroll	Production
a.	yes	no
b.	yes	yes
c.	no	yes
d.	no	no

ANS: A DIF: Easy OBJ: 13-4

47. Indirect costs should be allocated for all of the following reasons **except** to
a. motivate managers.
b. determine the full cost of a product.
c. motivate general administration.
d. compare alternatives for decision making.

ANS: C DIF: Moderate OBJ: 13-4

48. A service department provides specific functional tasks for other internal units. Which of the following activities would **not** be engaged in by a service department?
a. purchasing
b. warehousing
c. distributing
d. manufacturing

ANS: D DIF: Easy OBJ: 13-4

49. All of the following objectives are reasons to allocate service department costs to compute full cost **except** to
a. provide information on cost recovery.
b. abide by regulations that may require full costing in some instances.
c. provide information on controllable costs.
d. reflect production's "fair share" of costs.

ANS: C DIF: Moderate OBJ: 13-4

50. All of the following objectives are reasons that service department allocations can motivate managers **except** to
a. instill a consideration of support costs in production managers.
b. encourage production managers to help service departments control costs.
c. encourage the usage of certain services.
d. determine divisional profitability.

ANS: D DIF: Moderate OBJ: 13-4

51. Which of the following is a reason for allocating service department costs and thereby motivating management?
a. provides for cost recovery
b. provides relevant information in determining corporate-wide profits generated by alternative actions
c. meets regulations in some pricing instances
d. reflects usage of services on a fair and equitable basis

ANS: D DIF: Moderate OBJ: 13-4

52. Service departments provide functional tasks for which of the following?

	Internal units	External units
a.	no	no
b.	yes	no
c.	no	yes
d.	yes	yes

ANS: B DIF: Easy OBJ: 13-4

53. After service department costs have been allocated, what is the final step in determining full product cost?
    a. determine direct material cost
    b. determine overhead application rates for revenue-producing areas
    c. determine direct labor cost
    d. determine total service department costs

ANS: B DIF: Easy OBJ: 13-4

54. Which of the following is **not** an objective for computing full cost?
    a. to reflect production's "fair share" of costs
    b. to instill a consideration of support costs
    c. to reflect usage of services on a fair and equitable basis
    d. to provide for cost recovery

ANS: C DIF: Moderate OBJ: 13-4

55. A rational and systematic allocation base for service department costs should reflect the cost accountant's consideration of all of the following **except**
    a. the ability of revenue-producing departments to bear the allocated costs.
    b. the benefits received by the revenue-producing department from the service department.
    c. a causal relationship between factors in the revenue-producing department and costs incurred in the service department.
    d. all of the above are considerations.

ANS: D DIF: Moderate OBJ: 13-4

56. Which of the following is **not** a method for allocating service department costs?
    a. step method
    b. indirect method
    c. direct method
    d. algebraic method

ANS: B DIF: Easy OBJ: 13-4

57. Which service department cost allocation method assigns costs directly to revenue-producing areas with no other intermediate cost pools or allocations?
    a. step method
    b. indirect method
    c. algebraic method
    d. direct method

ANS: D DIF: Easy OBJ: 13-4

58. The overhead allocation method that allocates service department costs without consideration of services rendered to other service departments is the
    a. step method.
    b. direct method.
    c. reciprocal method.
    d. none of the above.

    ANS: B DIF: Easy OBJ: 13-4

59. Which service department cost allocation method assigns indirect costs to cost objects after considering some of the interrelationships of the cost objects?
    a. step method
    b. indirect method
    c. algebraic method
    d. direct method

    ANS: A DIF: Easy OBJ: 13-4

60. Which service department cost allocation method utilizes a "benefits-provided" ranking?
    a. algebraic method
    b. indirect method
    c. step method
    d. direct method

    ANS: C DIF: Easy OBJ: 13-4

61. Which service department cost allocation method assigns indirect costs to cost objects after considering interrelationships of the cost objects?

	Algebraic method	Step method
a.	no	no
b.	no	yes
c.	yes	yes
d.	yes	no

    ANS: C DIF: Easy OBJ: 13-4

62. Which of the following methods of assigning indirect service department costs recognizes on a partial basis the reciprocal relationships among the departments?
    a. step method
    b. direct method
    c. indirect method
    d. algebraic method

    ANS: A DIF: Easy OBJ: 13-4

63. The most accurate method for allocating service department costs is the
    a. step method.
    b. direct method.
    c. algebraic method.
    d. none of the above.

    ANS: C DIF: Easy OBJ: 13-4

64. The criteria that are most often used to decide on allocation bases are?

	Benefits received	Fairness	Causal relationships
a.	yes	yes	no
b.	yes	yes	yes
c.	no	yes	yes
d.	no	no	no

ANS: B DIF: Moderate OBJ: 13-4

65. To identify costs that relate to a specific product, an allocation base should be chosen that
a. does not have a cause-and-effect relationship.
b. has a cause-and-effect relationship.
c. considers variable costs but not fixed costs.
d. considers direct material and direct labor but not manufacturing overhead.

ANS: B DIF: Easy OBJ: 13-4

66. The fixed costs of service departments should be allocated to production departments based on
a. actual short-run utilization based on predetermined rates.
b. actual short-run units based on actual rates.
c. the service department's expected costs based on expected long-run use of capacity.
d. the service department's actual costs based on actual utilization of services.

ANS: D DIF: Moderate OBJ: 13-4

67. Which service department cost allocation method provides for reciprocal allocation of service costs among the service department as well as to the revenue producing departments?
a. algebraic method
b. indirect method
c. step method
d. direct method

ANS: A DIF: Easy OBJ: 13-4

68. The algebraic method
a. considers all interrelationships of the departments and reflects these relationships in equations.
b. does not consider interrelationships of the departments nor reflect these relationships in equations.
c. is also referred to as the "benefits-provided" ranking method.
d. is not a service department cost allocation method.

ANS: A DIF: Easy OBJ: 13-4

69. Which service department cost allocation method considers all interrelationships of the departments and reflects these relationships in equations?
a. step method
b. indirect method
c. algebraic method
d. direct method

ANS: C DIF: Easy OBJ: 13-4

70. An automotive company has three divisions. One division manufactures new replacements parts for automobiles, another rebuilds engines, and the third does repair and overhaul work on a line of trucks. All three divisions use the services of a central payroll department. The best method of allocating the cost of the payroll department to the various operating divisions is
    a. total labor hours incurred in the divisions.
    b. value of production in the divisions.
    c. direct labor costs incurred in the divisions.
    d. machine hours used in the divisions.

    ANS: A DIF: Moderate OBJ: 13-4

71. The allocation of general overhead control costs to operating departments can be **least** justified in determining
    a. income of a product or functional unit.
    b. costs for making management's decisions.
    c. costs of products sold.
    d. costs for government's "cost-plus" contracts.

    ANS: B DIF: Moderate OBJ: 13-4

Diller Corporation

Diller Corporation has three production departments A, B, and C. Diller Corporation also has two service departments, Administration and Personnel. Administration costs are allocated based on value of assets employed, and Personnel costs are allocated based on number of employees. Assume that Administration provides more service to the other departments than does the Personnel Department.

Dept.	Direct Costs	Employees	Asset Value
Admin.	$900,000	25	$450,000
Personnel	350,000	10	600,000
A	700,000	15	300,000
B	200,000	5	150,000
C	250,000	10	800,000

72. Refer to Diller Corporation. Using the direct method, what amount of Administration costs is allocated to A (round to the nearest dollar)?
    a. $216,000
    b. $150,000
    c. $288,000
    d. $54,000

    ANS: A

    $900,000 * (300,000/1,250,000) = $216,000

    DIF: Moderate OBJ: 13-4

73. Refer to Diller Corporation. Using the direct method, what amount of Personnel costs is allocated to B (round to the nearest dollar)?
    a. $50,000
    b. $43,750
    c. $26,923
    d. $58,333

    ANS: D
    $350,000 * (5/30) = $58,333

    DIF: Moderate OBJ: 13-4

74. Refer to Diller Corporation. Using the direct method, what amount of Administration costs is allocated to C (round to the nearest dollar)?
    a. $576,000
    b. $ 54,000
    c. $108,000
    d. $150,000

    ANS: A
    $900,000 * $(800,000/1,250,000) = $576,000

    DIF: Moderate OBJ: 13-4

75. Refer to Diller Corporation. Using the step method, what amount of Administration costs is allocated to Personnel (round to the nearest dollar)?
    a. $72,973
    b. $291,892
    c. $145,946
    d. $389,189

    ANS: B
    $900,000 * $(600,000/1,850,000) = $291,282

    DIF: Moderate OBJ: 13-4

76. Refer to Diller Corporation. Using the step method, what amount of Administration costs is allocated to A (round to the nearest dollar)?
    a. $72,973
    b. $291,892
    c. $145,946
    d. $389,189

    ANS: C
    $900,000 * $(300,000/1,850,000) = $145,946

    DIF: Moderate OBJ: 13-4

77. Refer to Diller Corporation. Using the step method, what amount of Administration costs is allocated to B (round to the nearest dollar)?
    a. $72,973
    b. $291,892
    c. $145,946
    d. $389,189

    ANS: A
    $900,000 * $(150,000/1,850,000) = $72,973

    DIF: Moderate OBJ: 13-4

78. Refer to Diller Corporation. Using the step method, what amount of Administration costs is allocated to C (round to the nearest dollar)?
    a. $389,189
    b. $145,946
    c. $291,892
    d. $72,973

    ANS: A
    $900,000 * $(800,000/1,850,000) = $389,189

    DIF: Moderate OBJ: 13-4

79. Refer to Diller Corporation. Assume that Administration costs have been allocated and the balance in Personnel is $860,000. What amount is allocated to A (round to the nearest dollar)?
    a. $213,964
    b. $106,982
    c. $430,000
    d. $0

    ANS: C
    $860,000 * (15/30) = $430,000

    DIF: Moderate OBJ: 13-4

80. Refer to Diller Corporation. Assume that Administration costs have been allocated and the balance in Personnel is $860,000. What amount is allocated to B (round to the nearest dollar)?
    a. $213,964
    b. $430,000
    c. $106,982
    d. $143,333

    ANS: D
    $860,000 * (5/30) = $143,333

    DIF: Moderate OBJ: 13-4

81. Refer to Diller Corporation. Assume that Administration costs have been allocated and the balance in Personnel is $860,000. What amount is allocated to C (round to the nearest dollar)?
    a. $213,964
    b. $430,000
    c. $286,667
    d. $143,333

    ANS: C
    $860,000 * (10/30) = $286,667

    DIF: Moderate OBJ: 13-4

Albert Corporation

Albert Corporation has two service departments: Data Processing and Administration/Personnel. The company also has three divisions: X, Y, and Z. Data Processing costs are allocated based on hours of use and Administration/Personnel costs are allocated based on number of employees.

Department	Direct costs	Employees	Hours of use
Administration/Personnel	$400,000	10	3,300
Data Processing	850,000	5	1,100
X	450,000	30	1,800
Y	300,000	15	2,200
Z	550,000	25	4,500

Assume that Data Processing provides more service than Administration/Personnel.

82. Refer to Albert Corporation. Using the direct method, what amount of Data Processing costs is allocated to X (round to the nearest dollar)?
    a. $180,000
    b. $129,661
    c. $0
    d. $84,706

    ANS: A

    $850,000 * (1,800/8,500) = $180,000

    DIF: Moderate OBJ: 13-4

83. Refer to Albert Corporation. Using the direct method, what amount of Data Processing costs is allocated to Y (round to the nearest dollar)?
    a. $158,475
    b. $0
    c. $220,000
    d. $103,529

    ANS: C
    $850,000 * (2,200/8,500) = $220,000

    DIF: Moderate OBJ: 13-4

84. Refer to Albert Corporation. Using the direct method, what amount of Data Processing costs is allocated to Z (round to the nearest dollar)?
    a. $211,765
    b. $0
    c. $152,542
    d. $450,000

    ANS: D
    $850,000 * (4,500/8,500) = $450,000

    DIF: Moderate OBJ: 13-4

85. Refer to Albert Corporation. Assume that Data Processing costs have been allocated and the balance in Administration is $600,000. Using the step method, what amount is allocated to X?
    a. $257,143
    b. $112,500
    c. $200,000
    d. $187,500

    ANS: A

    $600,000 * 30/70 = $257,143

    DIF: Moderate OBJ: 13-4

86. Refer to Albert Corporation. Assume that Data Processing costs have been allocated and the balance in Administration is $600,000. Using the step method, what amount is allocated to Y?
    a. $225,000
    b. $128,571
    c. $187,500
    d. $200,000

    ANS: B
    $600,000 * 15/70 = $128,571

    DIF: Moderate OBJ: 13-4

87. Refer to Albert Corporation. Assume that Data Processing costs have been allocated and the balance in Administration is $600,000. Using the step method, what amount is allocated to Z?
    a. $200,000
    b. $112,500
    c. $214,286
    d. $225,000

    ANS: C
    $600,000 * 25/70 = $214,286

    DIF: Moderate OBJ: 13-4

Baretta Corporation

Baretta Corporation has two service departments: Data Processing and Personnel. Data Processing provides more service than does Personnel. Baretta Corporation also has two production departments: A and B. Data Processing costs are allocated on the basis of assets used while Personnel costs are allocated based on the number of employees.

Department	Direct costs	Employees	Assets used
Data Processing	$1,000,000	15	$700,000
Personnel	300,000	8	230,000
A	500,000	12	125,000
B	330,000	20	220,000

88. Refer to Baretta Corporation. Using the direct method, what amount of Data Processing costs is allocated to A (round to the nearest dollar)?
    a. $362,319
    b. $637,681
    c. $253,623
    d. $446,377

    ANS: A

    $1,000,000 * $(125,000/345,000) = $362,319

    DIF: Moderate OBJ: 13-4

89. Refer to Baretta Corporation. Using the direct method, what amount of Personnel costs is allocated to B (round to the nearest dollar)?
    a. $123,750
    b. $206,250
    c. $112,500
    d. $187,500

    ANS: D

    $300,000 * 20/32 = $187,500

    DIF: Moderate OBJ: 13-4

Grant Corporation

Grant Corporation distributes its service department overhead costs directly to producing departments without allocation to the other service departments. Information for January is presented here.

	Maintenance	Utilities
Overhead costs incurred	$18,700	$9,000
Service provided to:		
Maintenance Dept.		10%
Utilities Dept.	20%	
Producing Dept. A	40%	30%
Producing Dept. B	40%	60%

90. Refer to Grant Corporation. The amount of Utilities Department costs distributed to Dept. B for January should be (rounded to the nearest dollar)
    a. $3,600.
    b. $4,500.
    c. $5,400.
    d. $6,000.

    ANS: D

    Departments A and B have a 2:1 ratio of overhead sharing. This translates to 2/3 of the expenses being allocated to Department B, $9,000 * 2/3 = $6,000.

    DIF: Moderate OBJ: 13-4

91. Refer to Grant Corporation. Assume instead Grant Corporation distributes the service department's overhead costs based on the step method. Maintenance provides more service than does Utilities. Which of the following is **true?**
    a. Allocate maintenance expense to Departments A and B.
    b. Allocate maintenance expense to Departments A and B and the Utilities Department.
    c. Allocate utilities expense to the Maintenance Department and Departments A and B.
    d. None of the above.

    ANS: B DIF: Moderate OBJ: 13-4

92. Refer to Grant Corporation. Using the step method, how much of Grant Corporation's Utilities Department cost is allocated between Departments A and B?
    a. $9,900
    b. $10,800
    c. $12,740
    d. $27,700

    ANS: C

    Maintenance is allocated first, and 20% is added to the original utilities cost.
    $9,000 + ($18,700 * .20) = $(9,000 + 3,740) = $12,740.

    DIF: Moderate OBJ: 13-4

93. Refer to Grant Corporation. Assume that Grant Corporation distributes service department overhead costs based on the algebraic method. What would be the formula to determine the total maintenance costs?
    a. M = $18,700 + .10U
    b. M = $9,000 + .20U
    c. M = $18,700 + .30U + .40A + .40B
    d. M = $27,700 + .40A + .40B

    ANS: A DIF: Moderate OBJ: 13-4

SHORT ANSWER

1. Describe the lowest internal transfer price that an autonomous division manager of an investment center would consider accepting for a product that his/her division produces.

   ANS:
   The lowest price that an investment center manager should ever consider is the one that would leave his/her performance evaluation measures unaffected. Typically, this would be the price that maintains divisional profits at the level that existed prior to acceptance of the internal transfer. This price should be no lower than the total of the selling segment's incremental costs associated with the services/goods plus the opportunity cost of the facilities used.

   DIF: Moderate OBJ: 13-5

2. What are the advantages and disadvantages of market value as a transfer price?

   ANS:
   Market value has the advantage of being an external measure of value. It is subject to manipulation by neither the internal buying nor selling segment. In addition, it captures the relevant opportunity costs because it is a measure of the price that the internal selling unit could receive for its production from another buyer and a measure of the cost that would be incurred by the internal buying segment to purchase from an alternative seller. The disadvantages of market price include the possibility that there may not be a comparable product in the marketplace. If demand for the product has declined, establishing a transfer price becomes more difficult. Additionally, if the firm has experienced a reduction in expenses related to the product, market price may not be reliable or appropriate as a transfer price.

   DIF: Moderate OBJ: 13-5

3. Why is "standard cost" a better measure for a transfer price than "actual cost"?

   ANS:
   When a transfer is based on actual cost, the producing division has no incentive to be efficient in its production. With a standard costing system, any differences between standard and actual costs will be the responsibility of the producing division. Hence, the producing division has incentive to be efficient.

   DIF: Moderate OBJ: 13-5

4. Can the performance evaluation measures (for autonomous subunit managers) create goal congruence problems in transfer pricing situations? Explain.

   ANS:
   Yes, at times, performance-based incentives can conflict with overall organizational goals. The situation is the worst when upper level managers look at the performance of subunit managers in a comparative fashion. In this case, before transacting with another internal segment, each manager needs to determine how the transaction would affect his/her performance evaluation measure relative to the performance evaluation measure of the other transacting party.

   DIF: Moderate OBJ: 13-5

5. Why don't upper-level managers simply dictate transfer prices to divisional managers, and thereby avoid all the hassles and expense of the negotiations between them (divisional managers)?

   ANS:
   Once upper-level managers impose their wills on lower-level managers, the autonomy of the lower-level managers is reduced. This situation is significant because managers should only be evaluated on the controllable aspects of operations. If upper management sets transfer prices, various divisional income measures (ROI, RI, etc.) are no longer fair bases on which to evaluate lower-level managers. Thus, intervention reduces both the authority to act and the subsequent responsibility of lower managers.

   DIF: Moderate OBJ: 13-5

6. What are the advantages and disadvantages of decentralization within an organization?

   ANS:
   The advantages of decentralization are:
   1. It helps top management recognize and develop managerial talent.
   2. It allows managerial performance to be comparatively evaluated.
   3. It can often lead to greater job satisfaction and provides job enrichment.
   4. It makes the accomplishment of organizational goals and objectives easier.
   5. It reduces decision-making time.
   6. It allows the use of management by exception.

   The disadvantages of decentralization are:
   1. It can result in a lack of goal congruence or suboptimization by subunit managers.
   2. It requires more effective communication abilities because decision making is removed from the home office.
   3. It can create personnel difficulties upon introduction, especially if managers are unwilling or unable to delegate effectively.
   4. It can be extremely expensive, including costs of training and of making poor decisions.

   DIF: Moderate OBJ: 13-1

7. What are the four types of responsibility centers? What is the focus of each of these responsibility centers?

   ANS:
   Cost center--Manager is responsible for cost containment
   Revenue center--Manager is responsible for generation of revenue
   Profit center--Manager is responsible for net income of a unit
   Investment center--Manager is responsible for return on asset base

   DIF: Moderate OBJ: 13-3

8. What are four criteria that a valid base for allocating costs should consider?

   ANS:
   The four criteria are as follows:

   1. Benefit the revenue-producing department receives from the service department
   2. Causal relationship existing between factors in the revenue-producing department
   3. Fairness or equity of the allocations between revenue-producing departments
   4. Ability of revenue-producing departments to bear the allocated costs

   DIF: Moderate OBJ: 13-4

9. What are four common methods used to allocate service department costs?

   ANS:
   Direct method--assigns service department costs in a straight-forward manner to revenue producing areas.
   Step method--ranks the quantity of services provided by each service department to other service areas.
   Benefits-provided ranking--begins with the service department providing the most service to all other service areas and ends with the service department providing the least service to all other service areas.
   Algebraic method--uses simultaneous equations that provide for reciprocal allocation of service costs among other service departments as well as revenue-producing departments. It is the most theoretically correct method.

   DIF: Moderate OBJ: 13-4

10. What are the two general rules that should be followed when computing a transfer price?

    ANS:
    1. The maximum price should be no higher than the lowest market price at which the buying segment can acquire the good or service eternally.
    2. The minimum price should be no less than the sum of the selling segment's incremental costs associated with the goods or services plus the opportunity cost of the facilities used.

    DIF: Moderate OBJ: 13-5

PROBLEM

Ecological Products Corporation

The Electric Division of Ecological Products Co. has developed a wind generator that requires a special "S" ball bearing. The Ball Bearing Division of Ecological Products Co. has the capability to produce such a ball bearing.

Unfortunately, the Ball Bearing Division is operating at capacity and will need to reduce production of another existing product, the "T" bearing, by 1,000 units per month to provide the 600 "S" bearings needed each month by the Electric Division. The "T" bearing currently sells for $50 per unit. Variable costs incurred to produce the "T" bearing are $30 per unit; variable costs to produce the new "S" bearing would be $60 per unit.

The Electric Division has found an external supplier that would furnish the needed "S" bearings at $100 per unit. Assume that both the Electric Division and Ball Bearing Division are independent, autonomous investment centers.

1. Refer to Ecological Products Co. What is the maximum price per unit that Electric Division would be willing to pay the Ball Bearing Division for the "S" bearing?

   ANS:
   Electric Division would be willing to pay no more than $100 per unit, the price offered by the external supplier.

   DIF: Moderate OBJ: 13-5

2. Refer to Ecological Products Co. What is the minimum price that Ball Bearing Division would consider to produce the "S" bearing?

   ANS:
   The minimum price that Ball Bearing Division would accept is the one that would leave its profits at the same level as if it only produced "T" bearings. To produce the "S" bearing, Ball Bearing Division must give up production and sale of 1,000 "T" bearings. These 1,000 bearings generate $20,000 of contribution margin: [1,000 × ($50 - $30)]. The sales price would have to be high enough to recoup both the variable costs of the "S" bearings and the contribution margin that is forfeited on the 1,000 units of "T" bearings: $60 + ($20,000/600) = $93.33

   DIF: Moderate OBJ: 13-5

3. Refer to Ecological Products Co. What is the minimum price that Ball Bearing Division would consider to produce the "S" bearing if the Ball Bearing Division did not need to forfeit any of its existing sales to produce the "S" bearing?

   ANS:
   The minimum price would be $60, the incremental costs to produce the "S" bearing.

   DIF: Moderate OBJ: 13-5

4. Refer to Ecological Products Co. What factors besides price would Electric Division want to consider in deciding where it will purchase the bearing?

   ANS:
   In particular, Electric Division would want to consider the quality of both suppliers. The factors to be considered would include: ability to meet delivery deadlines, quality of the product produced, ability to change as environmental conditions change, willingness to work on future cost reductions/quality improvements, business reputation, stability of the labor force, and possibility of future price increases.

   DIF: Moderate OBJ: 13-5

Sulphur Steel Corporation

The Wire Products Division of Sulphur Steel Corporation produces "bales" of steel wire that are used in various commercial applications. The bales sell for an average of $20 each and The Wire Products Division has the capacity to produce 10,000 bales per month. The Consumer Products Division of Sulphur Steel Corporation uses approximately 2,000 bales of steel wire each month in its production of various appliances. The operating information for the Wire Products Division at its present level of operations (8,000 bales per month) follows:

Sales (all external)	$160,000
Variable costs per bale:	
Production	$5
Selling	2
G&A	3
Fixed costs per bale (based on a 10,000 unit capacity):	
Production	$2
Selling	3
G&A	4

The Consumer Products Division currently pays $15 per bale for wire obtained from its external supplier.

5. Refer to Sulphur Steel Corporation. If 2,000 bales are transferred in one month to the Consumer Products Division at $10 per bale, what would be the profit/loss of the Wire Products Division?

ANS:
The $10 per unit would equal the Division's variable costs ($5 + 2 + 3 = $10), so the contribution margin per unit is zero. Thus, only the 8,000 units of external sales would generate a contribution margin of $80,000 (8,000 × $10) to cover fixed costs of $90,000 (10,000 × $9). So the Division would show a $10,000 loss.

DIF: Moderate OBJ: 13-5

6. Refer to Sulphur Steel Corporation. For the Wire Products Division to operate at break-even level, what would it need to charge for the production and transfer of 2,000 bales to the Consumer Products Division? Assume all variable costs indicated will be incurred by the Wire Products Division.

ANS:
Total fixed costs to Wire are:

Production	$2 × 10,000 =	$20,000
Selling	$3 × 10,000 =	30,000
G&A	$4 × 10,000 =	40,000
Total		$90,000

Less: Contrib.Margin on Regular Business	
[$20 - (5 + 2 + 3)] × 8,000	(80,000)
Unrecovered Fixed Costs	$10,000

which must be covered by CM of inside sales =
Trans.Price × Vol. = SP - [(5 + 2 + 3) × 2,000]
SP = $15

DIF: Moderate OBJ: 13-5

7. Refer to Sulphur Steel Corporation. If Wire Products Division transferred 2,000 wire bales to the Consumer Products Division at 200 percent of full absorption cost, what would be the transfer price?

ANS:

Full absorption cost:	Variable Production Cost =	$ 5
	Fixed Production Cost =	2
Total full absorption cost		$ 7
Doubled		x 2
Transfer price		$14

DIF: Moderate OBJ: 13-5

8. Refer to Sulphur Steel Corporation. If the Consumer Products Division agrees to pay the Wire Products Division $16 for 2,000 bales this month, what would be Consumer's change in total profits?

ANS:

Proposed transfer price per unit	$16
Consumer's current market purchase price per unit	15
Increase in cost per unit of wire to Consumer's	$ 1
Times units purchased	x 2,000
Decrease in profit due to increased costs	$2,000

DIF: Moderate OBJ: 13-5

9. Refer to Sulphur Steel Corporation. Assuming, for this question only, that the Wire Products Division would not incur any variable G&A costs on internal sales, what is the minimum price that it would consider accepting for sales of bales to the Consumer Products Division?

ANS:
Wire Division must cover its out of pocket costs or the relevant variable costs; the fixed costs are irrelevant since they will be incurred regardless of this extra inside business. Thus, the total cost to be covered is $7 (production, $5; selling, $2).

DIF: Moderate OBJ: 13-5

Floor Products Corporation

The Carpet Division of Floor Products Corporation manufactures a single grade of residential grade carpeting. The division has the capacity to produce 500,000 square yards of carpet each year. Its current costs and revenues are shown here:

Sales (400,000 square yards)	$2,000,000
Variable costs per square yard:	
Production	$2.00
SG&A	1.00
Fixed costs per square yard (based on 500,000 yard capacity)	
Production	$0.50
SG&A	1.00

The Housing Division currently purchases 40,000 yards of carpeting (of the grade produced by the Carpet Division) each year at a cost of $6.50 per square yard from an outside vendor.

10. Refer to Floor Products Corporation. If the autonomous Housing and Carpet Divisions enter negotiations on the internal transfer of 40,000 square yards of carpeting, what is the maximum price that will be considered?

    ANS:
    The maximum price or ceiling is the current purchase price of the buying division or $6.50 per yard.

    DIF: Moderate OBJ: 13-5

11. Refer to Floor Products Corporation. If the autonomous Housing and Carpet Divisions enter negotiations on the internal transfer of 40,000 square yards of carpeting, what is the Carpet Division's minimum price?

    ANS:
    The minimum price acceptable to Carpet is its incremental cost of $3 ($2 + $1) per square yard.

    DIF: Moderate OBJ: 13-5

12. Refer to Floor Products Corporation. If the Housing and Carpet Divisions agree on the internal transfer of 40,000 square yards of carpet at a price of $4.50 per square yard, how will the profits of the Housing Division be affected?

    ANS:

Current external purchase price	$6.50
Proposed transfer price	4.50
Reduction in purchase price per yard	$2.00
Times yards acquired	x 40,000
Increase in profits	$80,000

    DIF: Moderate OBJ: 13-5

13. Refer to Floor Products Corporation. If the Housing and Carpet Divisions agree on the internal transfer of 40,000 square yards of carpet at a price of $4.00 per square yard, how will overall corporate profits be affected?

    ANS:

Current outside purchase price per square yard	$6.50
Carpet's variable cost per square yard	3.00
Savings per square yard to Housing Division & corporate	$3.50
Times number square yards bought	x 40,000
Savings to corporate and increase in profits	$140,000

    DIF: Moderate OBJ: 13-5

14. Refer to Floor Products Corporation. Assume, for this question only, that the Carpet Division is producing and selling 500,000 square yards of carpet to external buyers at a price of $5 per square yard. What would be the effect on overall corporate profits if Carpet Division reduces external sales of carpet by 40,000 square yards and transfers the 40,000 square yards of carpet to the Housing Division?

ANS:
Since Carpet is operating at full capacity, it would lose the contribution margin on the 40,000 square yards. However, the Housing Division would not have to buy externally. Thus,

Lost CM	($2 × 40,000 yd) =	$(80,000)
Gained CM	($3.50 × 40,000 yd) =	140,000
Net increase in corporate profits		$ 60,000

DIF: Moderate OBJ: 13-5

Kingwood Corporation

Kingwood Corporation is comprised of two divisions: X and Y. X currently produces and sells a gear assembly used by the automotive industry in electric window assemblies. X is currently selling all of the units it can produce (25,000 per year) to external customers for $25 per unit. At this level of activity, X's per unit costs are:

Variable:	
Production	$7
SG&A	2
Fixed:	
Production	6
SG&A	5

Y Division wants to purchase 5,000 gear assemblies per year from X Division. Y Division currently purchases these units from an outside vendor at $22 each.

15. Refer to Kingwood Corporation. What is the minimum price per unit that X Division could accept from Y Division for 5,000 units of the gear assembly and be no worse off than currently?

ANS:
X Division is operating and selling outside at full capacity so minimum price is equal to the variable cost to make and sell plus the lost contribution margin from outside sales:

VC: Production	$7	
SGA	2	$ 9
Contribution margin		16
Selling price		$25

DIF: Moderate OBJ: 13-5

16. Refer to Kingwood Corporation. What will be the effect on overall corporate profits if the two divisions agree to an internal transfer of 5,000 units?

ANS:
Corporate profits will decrease by forcing the transfer.

CM per units earned by X is from external sales $25 - [$7 + $2]	$16
Times units to be sold	x 5,000
Decrease in CM to X and XY Corp.	$80,000
Net savings to buy internally	
rather than externally [$22 - $9]	$13
Times units to be purchased	x 5,000
Savings by buying internally	$ 65,000
Net effect on XY Corp. profits	$(15,000)

DIF: Moderate OBJ: 13-5

Acadian Savings and Loan

Acadian Savings and Loan has three departments that generate revenue: loans, checking accounts, and savings accounts. Acadian Savings and Loan has two service departments: Administration/Personnel and Maintenance. The service departments provide service in the order of their listing. The following information is available for direct costs. Administration/ Personnel costs are best allocated based on number of employees while Maintenance costs are best allocated based on square footage occupied.

Department	Direct costs	Employees	Footage
Admin./Pers.	$530,000	10	30,000
Maintenance	450,000	8	16,500
Loans	900,000	15	45,000
Checking	600,000	6	10,000
Savings	240,500	5	42,000

17. Refer to Acadian Savings and Loan. Using the direct method, compute the amount allocated to each department from Administration/Personnel.

ANS:

Loans	15/26 × $530,000	=	$305,769
Checking	6/26 × 530,000	=	122,308
Savings	5/26 × 530,000	=	101,923

DIF: Moderate OBJ: 13-4

18. Refer to Acadian Savings and Loan. Using the step method, compute the amount allocated to each department from Maintenance.

ANS:
To allocate Admin./Pers. to Maintenance
8/34 × $530,000 = $124,706(rounded)

Then, Maintenance balance is $450,000 + $124,706 = $574,706

Then, allocate Maintenance :

Loans	45/97 × $574,706 =	$266,616
Checking	10/97 × 574,706 =	59,248
Savings	42/97 × 574,706 =	248,842

DIF: Moderate OBJ: 13-4

19. Welsh Medical Clinic has two service departments: Building Operations and Utilities, and three operating departments: Rehabilitation, Preventative Medicine, and Geriatrics. Welsh Medical Clinic allocates the cost of Building Services on the basis of square footage and Utilities on the basis of patient days. Fixed and variable costs are not separated.

Budgeted operating data for the previous year are presented below:

	Service Departments		Operating Departments		
	Building Operations	Utilities	Rehabilitation	Preventative Medicine	Geriatrics
Budgeted costs before allocation	$20,000	$10,000	$90,000	$60,000	$100,000
Square Footage	1,000	4,000	6,000	18,000	12,000
Patient Days	-	-	5,500	7,700	8,800

Required:

a. Prepare a schedule to allocate service department costs to operating departments by the direct method (round all dollar amounts to the nearest whole dollar).
b. Prepare a schedule to allocate service department costs to operating departments by the step method, allocating Building Operations first (round all amounts to the nearest whole dollar).

ANS:
a. Direct Method:

	Service Departments		Operating Departments		
	Building Operations	Utilities	Rehabilitation	Preventative Medicine	Geriatrics
Budgeted costs before allocation	$20,000	$10,000	$90,000	$60,000	$100,000
Allocation of Building Operations	(20,000)				
Rehabilitation: (6,000/36,000) * $20,000			3,333		
Prev. Medicine: (18,000/36,000) * $20,000				10,000	
Geriatrics: (12,000/36,000) * $20,000					6,667
Allocation of Utilities:		(10,000)			
Rehabilitation: (5,500/22,000) * $10,000			2,500		
Prev. Medicine: (7,700/22,000) * $10,000				3,500	
Geriatrics: (8,800/22,000) * $10,000					4,000
Costs after allocation	-0-	-0-	$95,833	$73,500	$110,667

b. Step Method:

	Service Departments		Operating Departments		
	Building Operations	Utilities	Rehabilitation	Preventative Medicine	Geriatrics
Budgeted costs before allocation	$20,000	$10,000	$90,000	$60,000	$100,000
Allocation of Building Operations	(20,000)				
Energy: (4,000/40,000) * $20,000		2,000			
Rehabilitation: (6,000/40,000) * $20,000			3,000		
Prev. Medicine: (18,000/40,000) * $20,000				9,000	
Geriatrics: (12,000/40,000) * $20,000					6,000
Allocation of Utilities:		(12,000)			
Rehabilitation: (5,500/22,000) * $12,000			3,000		
Prev. Medicine: (7,700/22,000) * $12,000				4,200	
Geriatrics: (8,800/22,000) * $12,000					4,800
Costs after allocation	-0-	-0-	$96,000	$73,200	$110,800

DIF: Moderate OBJ: 13-4