

**Review Questions: ABC**

**True/False**

10. A major reason why low -volume products are often overcosted is that they require less support per revenue dollar, but this is not recognized in the costing system.

16 -18, 45. ABC Hospital uses a job cost system for all patients who have surgery. In January, the pre-operating room (PRE-OP) and operating room (OR) had budgeted allocation bases of 2,000 nursing hours and 1,000 nursing hours, respectively. The budgeted nursing overhead charges for each department for the month were \$84,000 and \$66,000, respectively. The hospital floor for surgery patients had budgeted overhead costs of \$600,000 and 7,500 nursing hours for the month. For patient Bob Dole, actual hours incurred were eight and four hours, respectively, in the PRE-OP and OR rooms. He was in the hospital for 4 days (96 hours). Other costs related to Dole were:

	<i>PRE-OP Costs</i>	<i>OR Costs</i>	<i>In-room Costs</i>
Patient medicine	\$ 100	\$ 250	\$1,200
Direct nursing time	2,400	3,500	5,400

The hospital uses a budgeted overhead rate for applying overhead to patient stays.

16. Determine the budgeted nursing overhead rate for PRE-OP Cost.

- a. \$42.00 b. \$66.00 c. \$80.00 d. \$43.25

17. Determine the budgeted nursing overhead rate for OR Cost.

- a. \$42.00 b. \$66.00 c. \$80.00 d. \$69.75

18. Determine the budgeted overhead rate for the hospital floor for surgery.

- a. \$42.00 b. \$66.00 c. \$80.00 d. \$45.75

45. What is the total cost of the stay of patient Bob Dole?

- a. \$ 1,550 b. \$11,300 c. \$ 8,280 d. \$21,130

34. When using activity -based costing in a manufacturing setting, its distinctive feature is its focus on

- a. activities as the fundamental cost objects.
- b. minimizing the number of journal entries related to the manufacturing process.
- c. minimizing manufacturing costs.
- d. materials handling.

39, 40, 49. Scissorshand, Inc. is a manufacturer of scissors. The company has always used a plant-wide rate for allocating manufacturing overhead to its products. The plant manager believes it is time to change to a better method of cost allocation. The accounting department has been able to establish some new relationships between production activities and the manufacturing overhead. They are as follows:

<i>Activity</i>	<i>Cost Driver</i>	<i>Allocation Rate</i>
Material handling	Number of parts	\$ 4 per part
Assembly	Labor hours	\$40 per hour
Inspection inspection station	Time item is at	\$ 6 per minute

The traditional allocation method is based upon direct manufacturing labor hours, and if that method is used the rate is \$400 per labor hour.

39. What are the indirect manufacturing costs per scissors, assuming the traditional method is used and a batch of 1,000 scissors were produced? The batch requires 2,000 parts, 20 direct manufacturing labor hours, and 30 minutes of inspection time.

- a. \$ 8.00 b. \$ 9.80 c. \$8,000.00 d. \$8,980.00

40. What are the indirect unit manufacturing costs of a batch of 100 scissors, assuming the activity base method is used? The batch requires 200 parts, 12 direct manufacturing labor hours, and 5 minutes of inspection time.

- a. \$ 8.00 b. \$ 13.10 c. \$ 48.00 d. \$1,310.00

49. What is the correct journal entry for recording the total manufacturing overhead for 100 scissors to the product using the activity base method?

- a. Work-in-process Control                      \$1,310.00  
    Manufacturing Overhead Control                      \$1,310.00
- b. Work-in-process Control                      \$4,800.00  
    Manufacturing Overhead Control                      \$4,800.00
- c. Work-in-process Control                      \$1,310.00  
    Manufacturing Overhead Allocated                      \$1,310.00
- d. Work-in-process Control                      \$4,800.00  
    Manufacturing overhead Allocated                      \$4,800.00

41. Which of the following statements about activity -based costing is FALSE?

- a. It promotes cost control.
- b. Indirect cost allocation bases are likely to be cost drivers.
- c. It provides less information than prior cost systems.
- d. It provides more accurate product costs.

42. Activity -based costing is most likely to yield benefits for companies with all of the following characteristics, EXCEPT

- a. numerous products that consume different amounts of resources.
- b. operations that remain fairly consistent.
- c. a highly competitive environment, where cost control is critical.
- d. accessible accounting and information systems expertise to maintain the system.

53. Asian Tools, a manufacturer of precision hand tools, is concerned with the apparent lack of controls over cost incurrence in its Hand Tool Division. The division has always used a plant-wide rate for allocating manufacturing overhead to its products. However, some products cost substantially more than competitors' retail prices while others are substantially less. The division manager believes that a better cost allocation method can be developed.

With the assistance of a plant supervisor, the accounting department has been able to establish the following relationships between production activities and the indirect costs of the activities:

<i>Activity</i>	<i>Cost Driver</i>	<i>Allocation Rate</i>
Material handling	Number of parts	\$ 2.60 per part
Machine stamping	Machine hours	\$60.00 per hour
Finishing	Time tool is at work station	\$ 4.00 per minute

The traditional allocation method is based upon direct manufacturing labor hours, and if that method is used the rate is \$28 per hour.

Required:

Compute the unit indirect manufacturing costs of a batch of 200 tools if the batch Required 220 parts, 8 machine hours, 52 minutes of finishing time, and 46 direct labor hours:

- a. Using the traditional allocation method, and
- b. Using the activity base method.

54. General Hospital uses a job cost system for all patients who have surgery. In October, the pre-operating room (PRE-OP) and operating room (OR) had budgeted allocation bases of 2,000 nursing hours and 1,000 nursing hours, respectively. The budgeted nursing overhead charges for each department for the month were \$168,000 and \$132,000, respectively. The hospital floor for surgery patients had budgeted overhead costs of \$1,200,000 and 7,500 nursing hours for the month. For patient Terry Engler, actual hours incurred were eight and four hours, respectively, in the PRE-OP and OR rooms. He was in the hospital for 4 days (96 hours). Other costs related to Engler were:

	<i>PRE-OP Costs</i>	<i>OR Costs</i>	<i>In-room Costs</i>
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Patient medicine	\$ 200	\$ 500	\$ 2,400
Direct nursing time	4,800	7,000	10,800
Indirect nursing time	800	0	1,200
Room usage charges	2,000	4,000	3,200
Nursing station supplies	400	1,600	2,200
Utilities for room occupied	100	200	150

The hospital uses a budgeted overhead rate for applying overhead to patient stays.

**Required:**

- Determine the budgeted nursing overhead rate for each department and the surgery floor.
- What is the total cost of the stay of patient Terry Engler?

57. Michigan Specialty Products manufactures household items sold at trade shows. The items, classified as either Trinkets or Widgets, are manufactured on a common assembly line. Although different direct materials are used and the machinery is re-tooled for each product, the direct laborers are the same for each product line.

The plant-wide rate for allocating manufacturing overhead to its products is no longer acceptable. The production manager has heard about activity-based costing and has assembled some information for use in changing the cost system to a cost driver concept.

With the help of the accounting department, the manager has been able to establish the following relationships between production costs and some of the indirect manufacturing activities for August, along with the production data for the two product lines:

Activity	Cost Driver	Allocation Rate	Activity used in	
			Trinkets	Widgets
Material handling	Number of parts	\$ 1.00 per part	2,000	1,300
Machining	Machine hours	\$15.00 per hour	205	300
Assembly	Units began	\$ 1.60 per unit	1,000	1,300
Inspection	Number tested	\$ 2.00 per unit	100	1,200
Direct costs:	Labor		\$12,000	\$12,000
Materials			\$ 5,200	\$ 2,600

**Required:**

Determine the total production cost of each of the two product lines for August and the cost per unit, assuming all units started were completed.

58. Hans Sorensen, controller of Franklin Production, has the choice of allocating indirect manufacturing cost using either direct manufacturing labor hours or manufacturing machine hours. If he uses labor hours for the month of January, Product A receives \$312,000 in manufacturing overhead charges and Product B receives \$448,000. When machine hours are used, Product A receives \$352,000 in manufacturing overhead charges while Product B receives only \$408,000.

**Required:**

You are the department manager in charge of Product A and are strongly in favor of using labor hours. Of course, your co-manager, who is in charge of Product B, is strongly in favor of machine hours. What are some arguments you may be able to give for the allocation base that favors your department's product?

**True/False**

- 11A. A specific approach to refining a costing system is activity-based costing.
- 31A. Provided a single allocation base is used, jobs are typically overcosted if
- jobs consume proportionately less of the base.
  - jobs require more employees.

- jobs consume relatively more of the base.
- jobs require more travel and communication between the two parties.

32A. A costing system which focuses on individual events or tasks as the fundamental cost objects is called

- activity-based costing.
- direct costing.
- job costing.
- process costing.

33A. Several steps are Required to implement ABC. Which of the following is NOT one of those steps?

- Interview employees to determine job characteristics.
- Identify the costs associated with the job characteristics.
- Calculate a direct cost rate.
- Identify a cost driver for each activity.

37A. Historically, many companies have used product profitability systems that had a single direct-cost category and a single indirect-cost category. In changing from the traditional system, an organization is Required to

- have more than one single direct-cost category.
- determine how the products use the resources of the organization.
- have more than one single direct- and indirect-cost category.
- change from a product profitability system to an ABC costing system.

39A, 41A-43A, 49A, 50A. Pollard and Grant, Dentists, are in the process of changing their costing system. Their system currently uses a single direct-cost pool (professional labor) and a single indirect-cost pool (staff support). The direct categories in the new, refined costing system include:

- Professional partner labor. Average total annual compensation of the two partners is \$100,000 each, and each partner has 2,000 hours of budgeted billable time.
- Dental assistant labor. Average total annual compensation of the four assistants is \$22,500 each, and each assistant has 2,000 hours of budgeted billable time.
- Office staff. Average total annual compensation of the two staff members is \$15,000 each, and each has 2,000 hours of budgeted billable time.

The indirect category in the new, refined costing system includes professional liability insurance. The budgeted indirect amount is \$200,000, and the allocation base is budgeted professional labor hours. The dentist and dental assistants are considered professional labor hours.

39A. What is the budgeted direct-cost rate per hour for professional partner labor?

- \$57.63 per hour
- \$50.00 per hour
- \$44.50 per hour
- \$38.00 per hour

41A. What is the budgeted direct-cost rate per hour for dental assistant labor?

- \$17.875 per hour
- \$16.125 per hour
- \$13.750 per hour
- \$11.250 per hour

42A. What is the budgeted direct-cost rate per hour for office staff?

- \$11.250 per hour
- \$ 9.625 per hour
- \$ 7.500 per hour
- \$ 6.875 per hour

43A. What would be the percentage change in the budgeted direct-cost rate per hour if Pollard and Grant consider hiring one more employee, as part of the office staff?

- 3%
- 2%
- 1%
- 0%

49A. What is the budgeted indirect-cost rate per unit of the allocation base for the professional liability insurance?

- \$ 16.67
- \$100.00
- \$ 1.67
- \$ 26.67

50A. What would be the new budgeted direct-cost rate if Pollard and Grant decided to give

all of the dental assistants a 10% raise?

- a. \$13,000 per hour      b. \$12,375 per hour  
 c. \$11,250 per hour      d. \$9,875 per hour

**Answers**

10. False

16. a Nursing overhead rate PRE-OP = \$84,000/2,000 hrs. = \$42 per hr.

17. b Nursing overhead rate OR = \$66,000/1,000 hrs. = \$66 per hr.

18. c Overhead rate for surgery floor = \$600,000/7,500 hrs. = \$80 per hr.

45. d Patient Bob Dole:

	PRE-OP	OR	In-room	Totals
Patient medicine	\$100	\$250	\$1,200	\$1,550
Direct nursing time	2,400	3,500	5,400	11,300
Nursing overhead:				
PRE-OP \$42 x 8	336			336
OR \$66 x 4		264		264
In-room \$80 x 96			7,680	7,680
<b>Total</b>				<b>\$21,130</b>

34. a

39. a 20 hours x \$400 = \$8,000 per batch or \$8,000/1,000 = \$8.00 per unit

40. b

Material handling	(\$4 x 200)	\$ 800
Assembly	(\$40 x 12)	480
Inspection	(\$6 x 5)	30
<b>Batch total</b>		<b>\$1,310</b>
Unit costs	\$1,310/100 = \$13.10	

49. c

Material handling	(\$4 x 200)	\$ 800
Assembly	(\$40 x 12)	480
Inspection	(\$6 x 5)	30
<b>Batch total</b>		<b>\$1,310</b>

41. c

42. b

53. a. Traditional method: 46 hours x \$28 = \$1,288 per batch  
 or \$1,288/200 = 6.44 per unit

b. Activity base method:

Material handling	(\$2.60 x 220)	\$ 572
Machine stamping	(\$60 x 8)	480
Finishing	(\$4 x 52)	208
<b>Batch total</b>		<b>\$1,260</b>

Unit costs \$1,260/200 = \$6.30 per unit

54. a. Nursing overhead rate PRE-OP = \$168,000/2,000 hrs. = \$84 per hr.

Nursing overhead rate OR = \$132,000/1,000 hrs. = \$132 per hr.

Nursing overhead rate surgery floor = \$1,200,000/7,500 hrs. = \$160 per hr.

b. Patient Terry Engler:

	PRE-OP	OR	In-room	Totals
Patient medicine	\$200	\$500	\$2,400	\$3,100
Direct nursing time	4,800	7,000	10,800	22,600
Nursing overhead:				
PRE-OP \$84 x 8	672			672
OR \$132 x 4		528		528
In-room \$160 x 96			15,360	15,360
<b>Total</b>				<b>\$42,260</b>

57.

	Trinkets	Widgets
Direct manufacturing costs:		
Direct labor	\$12,000	\$12,000
Direct materials	5,200	2,600
<b>Total direct costs</b>	<b>17,200</b>	<b>14,600</b>

Indirect manufacturing costs:

Material handling (\$1.00 x 2,000)	2,000	
(\$1.00 x 1,300)		1,300
Machining (\$15.00 x 205)	3,075	
(\$15.00 x 300)		4,500
Assembly (\$1.60 x 1,000)	1,600	
(\$1.60 x 1,300)		2,080
Inspection (\$2.00 x 100)	200	
(\$2.00 x 1,200)		2,400

Total indirect costs 9,950 14,780

Total manufacturing costs \$24,075 \$24,880

Unit manufacturing costs \$24,075 \$24,880  
 = \$24.075 = \$19.138

58. Arguments that may be favorable to your department include:

1. Direct manufacturing labor is a better measure of indirect manufacturing costs than is manufacturing machine hours. The machines often run when no products are being processed through them.

2. Labor hours reflect a stronger cause and effect relationship to what is being done to the products than do machine hours. The manufacturing process is labor intensive rather than machine-processing intensive.

3. Labor hours are easier to collect than machine hours because the information can be taken directly from the payroll information.

4. Most of the manufacturing overhead items relate to the laborers rather than to the machines; for example, lighting is for people machines can work in the dark.

11A. True

31A. c

32A. a

33A. c

39A. b  $(\$100,000 \times 2) / (2,000 \times 2) = \$50.00$  per hour

41A. d  $(\$22,500 \times 4) / (2,000 \times 4) = \$11.25$  per hour

42A. c  $(\$15,000 \times 2) / (2,000 \times 2) = \$7.50$  per hour

43A. d  $(\$15,000 \times 3) / (2,000 \times 3) = \$7.50$ ;  $(\$7.50 - \$7.50) / \$7.50 = 0$  percent

49A. a  $\$200,000 / [2,000 \times 2) + (2,000 \times 4)] = \$16.67$  per hour

50A. b  $\$22,500 \times 10\% = \$2,250$ ;  $[(\$22,500 + 2,250) \times 4] / (2,000 \times 4) = \$12.375$