Chapter 2 Solutions

Questions

1. Companies that produce unique products or provide unique services, easily distinguished from other products or services, are likely to use a job costing system. Examples include custom home builders, auto mechanics, and tax accountants.

Companies that produce identical units of product in batches are likely to use a process costing system. Examples include producers of soft drinks, snack foods (chips, cookies, and the like), milk, and paint.

2. The materials requisition form includes the type, quantity, and cost of materials being requested and placed into production, and the job number where the materials will be used.

3. Job cost sheets accumulate manufacturing costs incurred for each job, and serve as a subsidiary ledger to the Work in Process Inventory account. This form includes the job number, customer name, and manufacturing costs incurred (direct materials, direct labor, and manufacturing overhead applied).

4. A timesheet is used by workers to track the hours spent on each job and includes the employee's name, date, job number, and hours worked for each job.

5. A predetermined overhead rate is used to allocate manufacturing overhead costs to jobs. The term used to describe this process is *overhead applied*.

6. Boeing uses a job costing system to track production costs for each jetliner it produces, including direct materials, direct labor, and manufacturing overhead costs. This information helps management in a variety of ways. Job costing provides cost information that is important in assessing profitability for each jetliner produced, and helps with establishing prices for future customer orders. Job costing also helps in evaluating the inputs required to produce jetliners, and whether the use of these inputs are efficient.

7. *Normal costing system* is the term used to describe a cost system that tracks actual direct materials and *actual* direct labor costs for each job, and charges manufacturing overhead to jobs using a *predetermined overhead rate*.

A predetermined overhead rate is used for several reasons.

- Actual overhead costs can fluctuate from month to month causing high amounts of overhead to be charged to jobs during high cost periods. Normal costing smoothes out these fluctuations.
- Actual overhead cost data is typically only available at the end of the month, quarter, or year. Managers do not like to wait for this information to figure out the cost of jobs.
- The price charged to customers is often established based on product cost. Managers want a way to estimate manufacturing overhead–a predetermined overhead rate provides the means to do this.
- Bookkeeping is simplified. The accountant simply uses a predetermined rate to record manufacturing overhead costs.

8. The two important factors to consider when selecting an allocation base are that the base must have some link to overhead costs (that is, must drive overhead costs), and the base must be relatively easy to measure (for example, direct labor hours are easy to measure–simply use timesheets to track this data).

9. Actual manufacturing overhead costs incurred are recorded as a debit to the Manufacturing Overhead account. Manufacturing overhead applied to jobs is recorded as a credit to the Manufacturing Overhead account. The difference between the two amounts is called *overapplied* or *underapplied* overhead.

10. Manufacturing overhead is underapplied when overhead applied is *less* than actual overhead costs incurred, resulting in a debit balance in the Manufacturing Overhead account. Manufacturing overhead is overapplied when overhead applied is *more* than actual overhead costs incurred, resulting in a credit balance in the Manufacturing Overhead account.

11. The first option is to close the Manufacturing Overhead account to Cost of Goods Sold. This is appropriate when the balance is not significant (i.e., immaterial). The second option is to close the Manufacturing Overhead account to three different accounts–Work in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold–in proportion to the account balances in each of these accounts. This is appropriate when the Manufacturing Overhead account balance is significant (i.e., material).

12. Although job costing systems in service organizations are similar to job costing systems used by manufacturing companies, differences are as follows:

- Service organizations tend to use fewer materials.
- Account names are slightly different–Raw Materials Inventory is called Parts Inventory or Supplies, Finished Goods Inventory is not applicable, Cost of Goods Sold is called Cost of Services, and Manufacturing Overhead is simply called Overhead.
- Costs are often tracked by customer (or client) rather than by product.

13. It is important for movie studios to have cost information for each movie, because stakeholders (actors, directors, etc.) are often paid based on the profit derived from the movie. Cost information is necessary to calculate the profitability of each movie, so a job costing system is used to track this information.

14. A job costing system tracks actual direct materials, direct labor, and manufacturing overhead costs for each job. Deducting these actual production costs from sales revenue provides a profitability measure for each job. Management often compares actual profit to estimated profit for each job to assess whether profit goals were achieved.

Brief Exercises

15. Product Costs at Custom Furniture Company

Dan is concerned with the lack of profits shown on last month's income statement. The price for each piece of furniture is based on a 70 percent markup of estimated product costs, but the income statement shows lower profits than expected.

Leslie proposed to compare actual costs to estimated costs for the three costliest jobs, and evaluate whether the estimates were reasonable based on this comparison.

16. Job Costing Versus Process Costing

1. Process costing
2. Job costing
3. Process costing
4. Job costing
5. Job costing
6. Process costing
7. Process costing
8. Job costing

17. Job Costing Versus Process Costing

1. Job costing
2. Process costing
3. Job costing
4. Process costing
5. Job costing
6. Process costing
7. Process costing
8. Job costing

18. Recording Purchase and Transfer of Raw Materials in T Accounts

a. and b.

Raw Materials Inventory			
(Oct. 5)	15,000	6,000	(Oct. 8)
		1,000	(Oct. 10)

Work in Process Inventory			
(Oct. 8)	6,000		

Manufacturing Overhead			
(Oct. 10)	1,000		

Accounts Payable			
		15,000	(Oct. 5)

19. Calculating Predetermined Overhead Rate

The predetermined overhead rate is calculated as follows:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated activity in allocation base}}$$

$$= \frac{\$8{,}000{,}000 \text{ estimated overhead costs}}{20{,}000 \text{ direct labor hours}}$$

$$= \$400 \text{ per direct labor hour}$$

Each job will be charged $400 in manufacturing overhead for each direct labor hour worked.

20. Service Organization Accounts

	Manufacturing	Service
1.	Raw Materials Inventory	Parts Inventory (or Supplies)
2.	Work in Process Inventory	Work in Process (if applicable)
3.	Finished Goods Inventory	Not applicable
4.	Cost of Goods Sold	Cost of Services (or other expense accounts)
5.	Manufacturing Overhead	Overhead (or Service Overhead)

21. Evaluating Profitability of Jobs

The company uses a 70 percent markup on estimated product costs to establish the sales price for each job. However, actual results on the income statement showed significantly less profit than the 70 percent would provide. The accountant at Custom Furniture Company suggested comparing actual costs to estimated costs to evaluate whether actual costs were in line with the initial estimates.

This analysis showed that actual direct materials costs were significantly higher than originally estimated resulting in lower profitability than expected for each job.

Exercises: Set A

22. Raw Materials Inventory Journal Entries

a.

1.	Raw Materials Inventory	55,000	
	Accounts Payable		55,000
2.	Work in Process Inventory	48,000	
	Raw Materials Inventory		48,000
3.	Manufacturing Overhead	14,000	
	Raw Materials Inventory		14,000

b.

Raw Materials Inventory

beg. bal.	45,000		
(1)	55,000	48,000	(2)
		14,000	(3)
end. bal.	38,000		

23. Work in Process Inventory Related Journal Entries

a.

1.	Work in Process Inventory	340,000	
	Raw Materials Inventory		340,000
2.	Work in Process Inventory	810,000	
	Wages Payable		810,000
3.	Work in Process Inventory	660,000	
	Manufacturing Overhead		660,000
4.	Finished Goods Inventory	1,960,000	
	Work in Process Inventory		1,960,000

b.

Work in Process Inventory

beg. bal.	900,000		
(1)	340,000	1,960,000	(4)
(2)	810,000		
(3)	660,000		
end. bal.	750,000		

24. Cost of Goods Sold Journal Entries

a.

1.	Finished Goods Inventory	445,000	
	Work in Process Inventory		445,000
2.	Cost of Goods Sold	470,000	
	Finished Goods Inventory		470,000

b.

Finished Goods Inventory

beg. bal.	650,000		
(1)	445,000	470,000	(2)
end. bal.	625,000		

25. Income Statement (with cost of goods sold adjustment)

Yamamoto, Inc.
Income Statement
Year Ended December 31

Sales		$3,050,000
Cost of goods sold before adjustment for underapplied overhead	$700,000	
Adjustment for underapplied overhead*	23,000	
Cost of goods sold		723,000
Gross profit		$2,327,000
Less operating (nonmanufacturing) expenses:		
Selling		575,000
General and administrative		330,000
Operating profit		$1,422,000

* This represents the amount of overhead underapplied to jobs and closed out to Cost of Goods Sold at the end of the year.

26. Manufacturing Overhead Allocation Base and Calculating the Cost of Jobs

a. The predetermined overhead rate is calculated as follows:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated activity in allocation base}}$$

Using Direct Labor Hours:

$$= \frac{\$3{,}000{,}000 \text{ estimated overhead costs}}{50{,}000 \text{ direct labor hours}}$$

$$= \underline{\$60.00 \text{ per direct labor hour}}$$

Using Direct Labor Costs:

$$= \frac{\$3{,}000{,}000 \text{ estimated overhead costs}}{\$600{,}000 \text{ direct labor cost}}$$

= $5.00 per direct labor dollar cost (or 500% of direct labor cost)

Using Machine Hours:

$$= \frac{\$3{,}000{,}000 \text{ estimated overhead costs}}{80{,}000 \text{ machine hours}}$$

$$= \underline{\$37.50 \text{ per machine hour}}$$

b. The goal is to allocate overhead using an allocation base that drives (or causes) overhead costs. If Brenner's production process is highly mechanized, overhead costs are likely driven by machine use. The more machine hours used, the higher the overhead costs incurred. Thus, there is a link between machine hours and overhead costs and using machine hours as an allocation base is preferable. Machine hours are also easily tracked, making implementation relatively simple.

c. Three different cost calculations are required:

	Direct Labor Hours	Direct Labor Cost	Machine Hours
Direct materials	$ 6,000	$ 6,000	$ 6,000
Direct labor	4,000	4,000	4,000
Manufacturing overhead	18,000*	20,000**	26,250***
Total cost of Job #128	$28,000	$30,000	$36,250

* $18,000 = $60 rate x 300 direct labor hours
** $20,000 = $5 rate (or 500 percent) x $4,000 direct labor cost
*** $26,250 = $37.50 rate x 700 machine hours

Exercises: Set B

27. Raw Materials Inventory Journal Entries

a.

1.	Raw Materials Inventory	50,000	
	Accounts Payable		50,000
2.	Work in Process Inventory	17,000	
	Raw Materials Inventory		17,000
3.	Manufacturing Overhead	8,000	
	Raw Materials Inventory		8,000

b.

Raw Materials Inventory

beg. bal.	110,000		
(1)	50,000	17,000	(2)
		8,000	(3)
end. bal.	135,000		

28. Work in Process Inventory Journal Entries

a.

1.	Work in Process Inventory	40,000	
	Raw Materials Inventory		40,000
2.	Work in Process Inventory	70,000	
	Wages Payable		70,000
3.	Work in Process Inventory	200,000	
	Manufacturing Overhead		200,000
4.	Finished Goods Inventory	290,000	
	Work in Process Inventory		290,000

b.

Work in Process Inventory

beg. bal.	300,000		
(1)	40,000	290,000	(4)
(2)	70,000		
(3)	200,000		
end. bal.	320,000		

29. Cost of Goods Sold Journal Entries

a.

1.	Finished Goods Inventory	17,000	
	Work in Process Inventory		17,000
2.	Cost of Goods Sold	14,000	
	Finished Goods Inventory		14,000

b.

Finished Goods Inventory

beg. bal.	25,000		
(1)	17,000	14,000	(2)
end. bal.	28,000		

30. Income Statement (with cost of goods sold adjustment)

Milan Company
Income Statement
Year Ended December 31

Sales		$5,000,000
Cost of goods sold before adjustment for overapplied overhead	$2,900,000	
Adjustment for overapplied overhead*	(109,000)	
Cost of goods sold		2,791,000
Gross profit		$2,209,000
Less operating (nonmanufacturing) expenses:		
Selling		825,000
General and administrative		570,000
Operating profit		$ 814,000

* This represents the amount of overhead overapplied to jobs and closed out to Cost of Goods Sold at the end of the year.

31. Manufacturing Overhead Allocation Base and Calculating the Cost of Jobs

a. The predetermined overhead rate is calculated as follows:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated activity in allocation base}}$$

Using Direct Labor Hours:

$$= \frac{\$800{,}000 \text{ estimated overhead costs}}{10{,}000 \text{ direct labor hours}}$$

$$= \$80 \text{ per direct labor hour}$$

Using Direct Labor Costs:

$$= \frac{\$800{,}000 \text{ estimated overhead costs}}{\$200{,}000 \text{ direct labor cost}}$$

= $4 per direct labor dollar cost (or 400% of direct labor cost)

Using Machine Hours:

$$= \frac{\$800{,}000 \text{ estimated overhead costs}}{4{,}000 \text{ machine hours}}$$

$$= \$200 \text{ per machine hour}$$

b. The goal is to allocate overhead using an allocation base that drives (or causes) overhead costs. If Kimmel's production process involves more direct labor than automated processes, overhead costs are likely driven by direct labor. The more direct labor hours used, the higher the overhead costs incurred. Thus, there is a link between direct labor hours (or direct labor costs) and overhead costs, and using direct labor as an allocation base is preferable. Direct labor hours and costs are also easily tracked, making implementation relatively simple.

c. Three different cost calculations are required:

	Direct Labor Hours	Direct Labor Cost	Machine Hours
Direct materials	$1,750	$1,750	$1,750
Direct labor	860	860	860
Manufacturing overhead	6,400*	3,440**	4,000***
Total cost of Job #15B	$9,010	$6,050	$6,610

* $6,400 = $80 rate x 80 direct labor hours
** $3,440 = $4 rate (or 400 percent) x $860 direct labor cost
*** $4,000 = $200 rate x 20 machine hours

Problems

32. Actual and Applied Manufacturing Overhead

a.

Manufacturing Overhead		95,000	
	Raw Materials Inventory		40,000
	Wages Payable		36,000
	Prepaid Rent		6,000
	Accumulated Depreciation, Equipment		13,000

b.

Work in Process Inventory		122,400*	
	Manufacturing Overhead		122,400

c.

Manufacturing Overhead

(a)	95,000	122,400	(b)
		27,400	end. bal.

d. Manufacturing Overhead has a credit balance of $27,400 as shown in part *c*, and thus is overapplied. The entry to close Manufacturing Overhead is:

Manufacturing Overhead		27,400	
	Cost of Goods Sold		27,400

* $122,400 = $24 x 5,100 machine hours

33. Actual and Applied Manufacturing Overhead

a.

Manufacturing Overhead	637,500	
Raw Materials Inventory		335,000
Wages Payable		275,000
Accumulated Depreciation, Factory		18,000
Utilities Payable (or Accounts Payable)		9,500

b.

Work in Process Inventory	600,000*	
Manufacturing Overhead		600,000

c.

Manufacturing Overhead

(a)	637,500	600,000	(b)
end. bal.	37,500		

d. Manufacturing Overhead has a debit balance of $37,500 as shown in part *c*, and thus is underapplied. The entry to close Manufacturing Overhead is:

Cost of Goods Sold	37,500	
Manufacturing Overhead		37,500

* $600,000 = $2 (or 200%) x $300,000 direct labor cost

34. Calculating the Cost of Jobs, Making Journal Entries, and Preparing an Income Statement

a.

	Job #1	Job #2	Job #3	Job #4	Total
Direct materials	$2,800	$1,250	$1,550	$ 780	$ 6,380
Direct labor	500	430	465	210	1,605
Manufacturing overhead ($30 x direct labor hrs)	900	750	840	450	2,940
Total cost	$4,200	$2,430	$2,855	$1,440	$10,925

b.

1. Raw Materials Inventory 14,400
   Accounts Payable 14,400

2. Work in Process Inventory 6,380
   Manufacturing Overhead 1,075
   Raw Materials Inventory 7,455

3. Work in Process Inventory 1,605
   Manufacturing Overhead 985
   Wages Payable 2,590

4. Work in Process Inventory 2,940
   Manufacturing Overhead 2,940

5. Finished Goods Inventory 9,485
   Work in Process Inventory 9,485
   ($9,485 = $4,200 Job #1 + $2,430 Job #2 + $2,855 Job #3)

6. Cost of Goods Sold 6,630
   Finished Goods Inventory 6,630
   ($6,630 = $4,200 Job #1 + $2,430 Job #2)

   Accounts Receivable 9,500
   Sales 9,500
   ($9,500 = $6,000 Job #1 + $3,500 Job #2)

c. Fit Right, Inc. made $1,070 in gross profit from the sale of Job 2 ($1,070 = $3,500 revenue - $2,430 cost). Note that the gross profit is the profit earned before covering selling, general and administrative costs.

34. (continued)

d.

Fit Right, Inc.
Income Statement
Month Ended July 31

Sales	$9,500
Cost of goods sold	6,630
Gross profit	$2,870
Deduct operating (nonmanufacturing) expenses:	
Selling	1,000
General and administrative	2,200
Operating loss	$ (330)

35. Calculating the Cost of Jobs, Making Journal Entries, and Preparing an Income Statement

a.

	Job 1	Job 2	Job 3	Total
Direct materials	$38,800	$19,300	$22,500	$ 80,600
Direct labor	7,400	5,900	3,250	16,550
Manufacturing overhead (160% x direct labor cost)	11,840	9,440	5,200	26,480
Total Cost	$58,040	$34,640	$30,950	$123,630

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b.

1.	Raw Materials Inventory	225,000	
	Accounts Payable		225,000
2.	Work in Process Inventory	80,600	
	Manufacturing Overhead	43,500	
	Raw Materials Inventory		124,100
3.	Work in Process Inventory	16,550	
	Manufacturing Overhead	4,850	
	Wages Payable		21,400
4.	Work in Process Inventory	26,480	
	Manufacturing Overhead		26,480
5.	Finished Goods Inventory	58,040	
	Work in Process Inventory		58,040
6.	Cost of Goods Sold	58,040	
	Finished Goods Inventory		58,040
	Accounts Receivable	70,000	
	Sales		70,000

c. Dirt Bikes, Inc., made $11,960 in gross profit from the sale of Job 1 ($11,960 = $70,000 revenue - $58,040 cost). Note that the gross profit is the profit earned before covering selling, general and administrative costs.

d.

Dirt Bikes, Inc.
Income Statement
Month Ended April 30

Sales	$70,000
Cost of goods sold	58,040
Gross profit	11,960
Less operating (nonmanufacturing) expenses:	
Selling	2,000
General and administrative	5,500
Operating profit	$ 4,460

36. Calculating the Cost of Jobs and Making Journal Entries for a Service Company

a.

	Job 1	Job 2	Job 3	Job 4	Total
Direct labor	$ 6,000	$ 6,800	$2,200	$350	$15,350
Service overhead (120% of direct labor cost)	7,200	8,160	2,640	420	18,420
Total cost	$13,200	$14,960	$4,840	$770	$33,770

b.

1.	Supplies	6,000		
	Accounts Payable		6,000	
2.	Service Overhead	3,200		
	Supplies		3,200	
3.	Work in Process	15,350		
	Service Overhead	3,600		
	Wages Payable		18,950	
4.	Work in Process	18,420		
	Service Overhead		18,420	
5.	Cost of Services	28,160		
	Work in Process		28,160	
	($28,160 = $13,200 + $14,960)			
	Accounts Receivable	41,000		
	Revenue			41,000
	($41,000 = $20,000 + $21,000)			

c. Tax Services, Inc., made $6,800 in gross profit for Job 1 ($6,800 = $20,000 revenue –$13,200 cost), and $6,040 in gross profit for Job 2 ($6,040 = $21,000 revenue – $14,960 cost). Note that the gross profit is the profit earned before covering selling, general and administrative costs.

d. Jobs 3 and 4 are still in process at the end of the first half of February. The cost for each of these jobs is $4,840 and $770, respectively. Thus, total Work in Process is $5,610.

37. Calculating the Cost of Jobs and Making Journal Entries for a Service Company

a.

	Job 1	Job 2	Job 3	Total
Direct labor	$1,500	$1,700	$400	$3,600
Service overhead ($10 per direct labor hour)	500	600	100	1,200
Total Cost	$2,000	$2,300	$500	$4,800

b.

1.	Supplies	1,500		
	Accounts Payable		1,500	
2.	Service Overhead	800		
	Supplies		800	
3.	Work in Process	3,600		
	Service Overhead	900		
	Wages Payable		4,500	
4.	Work in Process	1,200		
	Service Overhead		1,200	
5.	Cost of Services	2,000		
	Work in Process		2,000	
	Accounts Receivable	3,000		
	Sales Revenue		3,000	

c. Westley Company made $1,000 in gross profit for Job #1 ($1,000 = $3,000 revenue - $2,000 cost). Note that the gross profit is the profit earned before covering selling, general and administrative costs.

38. Closing Manufacturing Overhead: Two Approaches

a. The Manufacturing Overhead account has a credit balance of $90,000. Thus, overhead is overapplied–too much overhead has been applied to jobs.

b. When the balance in the Manufacturing Overhead account is immaterial, the account is typically closed to cost of goods sold. Since overhead is overapplied, cost of goods sold is decreased. The entry is:

Manufacturing Overhead	90,000	
Cost of Goods Sold		90,000

c. When the balance in the Manufacturing Overhead account is material, it should be closed to three different accounts–WIP Inventory, Finished Goods Inventory, and Cost of Goods Sold–in proportion to the account balances in these three accounts. Again, since overhead is overapplied, these three accounts are decreased. The entry is:

Manufacturing Overhead	90,000	
Work in Process Inventory		9,000*
Finished Goods Inventory		27,000*
Cost of Goods Sold		54,000*

* Amounts are calculated as follows:

Account	Account Balance	Percent of Total	Allocation Amount (% x $90,000)
WIP Inventory	$ 100,000	10%	$ 9,000
Finished Goods Inventory	300,000	30%	27,000
Cost of Goods Sold	600,000	60%	54,000
Total	$1,000,000	100%	$90,000

39. Closing Manufacturing Overhead: Two Approaches

a. The Manufacturing Overhead account has a debit balance of $60,000. Thus, overhead is underapplied–not enough overhead has been applied to jobs.

b. When the balance in the Manufacturing Overhead account is immaterial, the account is typically closed to Cost of Goods Sold. Since overhead is underapplied, Cost of Goods Sold is increased. The entry is:

Cost of Goods Sold	60,000	
Manufacturing Overhead		60,000

c. When the balance in the Manufacturing Overhead account is material, it should be closed to three different accounts–WIP Inventory, Finished Goods Inventory, and Cost of Goods Sold–in proportion to the account balances in these three accounts. Again, since overhead is underapplied, these three accounts are increased. The entry is:

Work in Process Inventory	6,000*	
Finished Goods Inventory	12,000*	
Cost of Goods Sold	42,000*	
Manufacturing Overhead		60,000

* Amounts are calculated as follows:

Account	Account Balance	Percent of Total	Allocation Amount (% x $60,000)
WIP Inventory	$ 200,000	10%	$ 6,000
Finished Goods Inventory	400,000	20%	12,000
Cost of Goods Sold	1,400,000	70%	42,000
Total	$2,000,000	100%	$60,000

Skill-Building Cases

40. Ethics: Shifting Hours Using Job Costing

a. The fee arrangement for the Anderson job provides for revenues to equal cost plus 50 percent. Because Heston Company is under budget on this job, there is an incentive to charge more time to it and collect additional fees. Since the Hinkle Corporation job revenue is simply $50,000 regardless of actual cost, there is an incentive to keep costs to a minimum–even if hours must be charged to the wrong job.

b. Charging time worked on the Hinkle job to the Anderson job is not ethical. It would create problems for management within Heston Company who prepare bids for new jobs based on historical information, and who rely on cost information to make future decisions. In addition, if cost information is falsified as Isabel is proposing, Anderson Company would pay more than its fair share for the work being performed.

Toby should first look to the company's established policies for ethical conflict resolution. If Heston Corporation does not have policies in place or if following the organization's policies does not resolve the conflict, the next step is to discuss the conflict with Toby's immediate superior. However, Toby's immediate supervisor (Isabel) is involved in the conflict, so approaching someone who supervises her would be best. If Isabel's superior is not receptive to Toby's concerns, the next step is to approach top management, or the board of directors of the company.

As stated in the IMA's statement, if the ethical conflict still exists after exhausting all levels of internal review, two additional options exist: (1) "Clarify relevant ethical issues by initiating a confidential discussion with an IMA Ethics Counselor or other impartial advisor to obtain a better understanding of possible courses of action" or (2) "Consult your own attorney as to legal obligations and rights concerning the ethical conflict."

41. Internet Project: Automation and Overhead Allocation

a. Answers will vary.

b. When direct labor is the most significant product cost, it is reasonable to assume that manufacturing overhead costs are driven by labor–the more labor being utilized, the higher the cost of overhead. As production processes shift toward automation, labor costs become a smaller part of total production costs, and overhead increases (resulting from increased machine maintenance, utilities, depreciation costs, and the like). Thus, using direct labor or direct labor costs as an allocation base is no longer reasonable. Some other allocation base such as machine hours would be better.

42. Group Project: Labor Costs at General Motors and Toyota

a. Answers will vary. Several possibilities are as follows:
1. GM is unionized and likely pays its workers a higher rate. According to the article, hourly wages for Toyota's workers average $35 (including benefits). Hourly wages for GM workers average $81 (including benefits).
2. Toyota's workers may be more efficient than GM's workers.
3. Toyota may have more automation and fewer assembly workers than GM.
4. Toyota's new factory includes state-of-the-art production equipment, while GM's factory is 50 years old and is more difficult to upgrade.

b. Assembly line labor is only one component of production. Other production costs to consider include costs for direct materials and manufacturing overhead items (for example, salaried supervisors, equipment depreciation, and maintenance). As production facilities become increasingly automated, direct labor costs decrease in proportion to total production costs. This makes the evaluation of direct materials and manufacturing overhead costs even more important.

Comprehensive Cases

43. Journal Entries, Closing Manufacturing Overhead, and Preparing an Income Statement

a.

Raw Materials Inventory			
beg. bal.	500,000		
(1) purchase	300,000	420,000 to production (2)	
end. bal.	380,000		

Manufacturing Overhead			
(2) indirect matls	60,000	1,800,000 overhead applied (8)	
(5) indirect labor	540,000		
(7) factory costs	1,320,000		
bal. before adj.	120,000		

Work in Process Inventory			
beg. bal.	700,000		
(2) direct matl	360,000	2,030,000 completed goods (11)	
(4) direct labor	800,000		
(8) overhead applied	1,800,000		
end. bal.	1,630,000		

Cost of Goods Sold			
(13) goods sold	2,570,000		
bal. before adj.	2,570,000		

Finished Goods Inventory			
beg. bal.	1,800,000		
(11) completed goods	2,030,000	2,570,000 goods sold (13)	
end. bal.	1,260,000		

b.

1.	Raw Materials Inventory	300,000		
	Accounts Payable		300,000	
2.	Work in Process Inventory	360,000		
	Manufacturing Overhead	60,000		
	Raw Materials Inventory		420,000	
3.	Accounts Payable	300,000		
	Cash		300,000	
4.	Work in Process Inventory	800,000		
	Wages Payable		800,000	
5.	Manufacturing Overhead	540,000		
	Wages Payable		540,000	
6.	Wages Payable	1,200,000		
	Cash		1,200,000	
7.	Manufacturing Overhead	1,320,000		
	Accumulated Depreciation, Building			580,000
	Prepaid Insurance			220,000
	Accounts Payable			80,000
	Cash			440,000

43.b. (continued)

8.	Work in Process Inventory	1,800,000	
	Manufacturing Overhead		1,800,000
	($20 x 90,000 machine hours)		
9.	Selling Expenses	430,000	
	Cash		430,000
10.	G&A Expenses	265,000	
	Cash		265,000
11.	Finished Goods Inventory	2,030,000	
	Work in Process Inventory		2,030,000
12.	Accounts Receivable	3,800,000	
	Sales		3,800,000
13.	Cost of Goods Sold	2,570,000	
	Finished Goods Inventory		2,570,000
14.	Cash	3,300,000	
	Accounts Receivable		3,300,000

c.

Cost of Goods Sold	120,000	
Manufacturing Overhead		120,000

43. (continued)

d.

Jansen, Inc.
Income Statement
Year Ended December 31, 2016

Sales	$3,800,000
Cost of goods sold ($2,570,000 + $120,000*)	2,690,000
Gross profit	$1,110,000
Less operating (nonmanufacturing) expenses:	
Selling	430,000
General and administrative	265,000
Operating profit	$ 415,000

* $120,000 is added to Cost of Goods Sold to reflect the adjustment necessary at year end to close out the Manufacturing Overhead account to Cost of Goods Sold. See entry in part ***c***.

e. Companies with overapplied or underapplied overhead use a *normal costing* system of allocating overhead costs to products. Normal costing uses a predetermined overhead rate rather than actual costs to apply overhead costs to products.

At Jansen, Inc., overhead was underapplied for the period, which means overhead costs applied to products during the period were less than actual overhead costs incurred during the period. That is, the company did not apply enough overhead costs to its products during the year. To make up for this lack of overhead costs being recorded, the amount of underapplied overhead is added to cost of goods sold on the income statement.

44. Journal Entries, Closing Manufacturing Overhead, and Preparing an Income Statement

a.

Raw Materials Inventory			
beg. bal.	50,000		
(1) purchase	30,000	41,000 to production (2)	
end. bal.	39,000		

Manufacturing Overhead			
(2) indirect matls	5,000	270,000 overhead applied (8)	
(5) indirect labor	134,000		
(7) factory costs	110,000		
		bal. before adj.	21,000

Work in Process Inventory			
beg. bal.	60,000		
(2) direct matl	36,000	478,000 completed goods (11)	
(4) direct labor	140,000		
(8) overhead applied	270,000		
end. bal.	28,000		

Cost of Goods Sold			
(13) goods sold	415,000		
bal. before adj.	415,000		

Finished Goods Inventory			
beg. bal.	90,000		
(11) completed goods	478,000	415,000 goods sold (13)	
end. bal.	153,000		

b.

1.	Raw Materials Inventory	30,000	
	Accounts Payable		30,000
2.	Work in Process Inventory	36,000	
	Manufacturing Overhead	5,000	
	Raw Materials Inventory		41,000
3.	Accounts Payable	30,000	
	Cash		30,000
4.	Work in Process Inventory	140,000	
	Wages Payable		140,000
5.	Manufacturing Overhead	134,000	
	Wages Payable		134,000
6.	Wages Payable	180,000	
	Cash		180,000
7.	Manufacturing Overhead	110,000	
	Accumulated Depreciation, Equipment		22,000
	Prepaid Rent		36,000
	Accounts Payable		33,000
	Cash		19,000

44.b (continued)

8.	Work in Process Inventory	270,000	
	Manufacturing Overhead		270,000
	($30 x 9,000 direct labor hours)		
9.	Selling Expenses	63,000	
	Cash		63,000
10.	G&A Expenses	18,000	
	Cash		18,000
11.	Finished Goods Inventory	478,000	
	Work in Process Inventory		478,000
12.	Accounts Receivable	780,000	
	Sales		780,000
13.	Cost of Goods Sold	415,000	
	Finished Goods Inventory		415,000
14.	Cash	380,000	
	Accounts Receivable		380,000

c.

Manufacturing Overhead	21,000	
Cost of Goods Sold		21,000

44. (continued)

d.

Mountain Nursery Company
Income Statement
Year Ended December 31, 2016

Sales	$780,000
Cost of goods sold ($415,000 – $21,000*)	394,000
Gross profit	386,000
Less operating (nonmanufacturing) expenses:	
Selling	63,000
General and administrative	18,000
Operating profit	$305,000

* $21,000 is deducted from Cost of Goods Sold to reflect the adjustment necessary at year end to close out the Manufacturing Overhead account to Cost of Goods Sold. See entry in part ***c***.

e. Companies with overapplied or underapplied overhead use a *normal costing* system of allocating overhead costs to products. Normal costing uses a predetermined overhead rate rather than actual costs to apply overhead costs to products.

At Mountain Nursery Company, overhead was overapplied for the period, which means overhead costs applied to products during the period were more than actual overhead costs incurred during the period. That is, the company applied too much in overhead costs to its products during the year. To make up for this excess of overhead costs being recorded, the amount of overapplied overhead is deducted from cost of goods sold on the income statement.