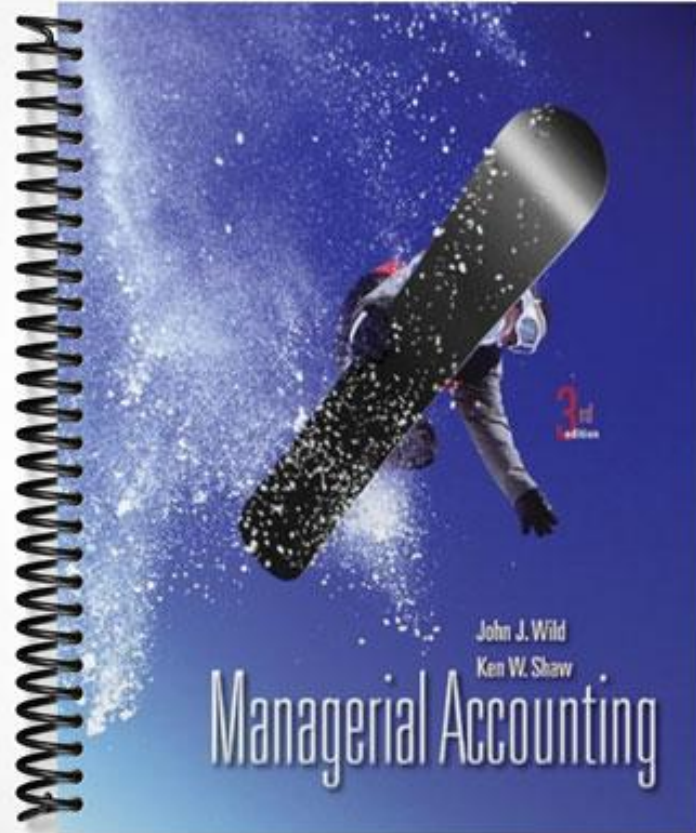


SOLUTIONS MANUAL



Chapter 2

Job Order Costing and Analysis

QUESTIONS

1. **Factory overhead is not identified with specific units (jobs) or batches (job lots). Therefore, to assign costs, estimates of the relation between factory overhead cost and job or job lot are necessary. Also, since job order cost accounting is a perpetual system, we need to estimate a predetermined overhead rate to compute (perpetual) inventory costs. This estimated amount also helps job order companies determine prices on a timely basis.**
2. **Several other factors (allocation bases) are possible and reasonable. These common factors often include direct materials or machine hours.**
3. **The job order cost sheet captures information on cost and quantity of direct material and direct labor, and on the amount of factory overhead applied to the respective job or job lot. Management and employees use this information to monitor costs during production and to estimate total cost of production.**
4. **Each job is assigned a subsidiary ledger account. This account serves as the “posting account” (accumulates all increases and decreases) during production for direct material, direct labor, and applied factory overhead. The collection of job cost sheets for all of the jobs in process make up a subsidiary ledger controlled by the Goods in Process Inventory account in the general ledger.**

When a job is finished, its job cost sheet is completed and moved from the file of jobs in process to the file of finished jobs awaiting delivery to customers. This latter file acts as a subsidiary ledger controlled by the Finished Goods Inventory account. In this way, management and employees can obtain the costs, direct and indirect, associated with any job or job lot at any time.

5. **A debit (increase) to Goods in Process Inventory for direct materials, a debit (increase) to Factory Overhead for indirect materials, and a credit (decrease) to Raw Materials Inventory.**
6. **The materials requisition slip is designed to track the movement of materials from raw materials to production. It also serves as an internal control document because without the slip the inventory department should not release inventory to production.**
7. **The clock card is used to record the number of hours each employee works and is used to compute total payroll. The time ticket is used to record how much time an employee spends on each job. Time tickets are also used to determine the amount of overhead to charge to jobs when overhead is based on direct labor.**

8. **Debits (increases) to factory overhead are the recording of actual overhead costs, such as indirect materials, indirect labor, factory rent, and factory insurance. Credits (decreases) represent the allocation of factory overhead to jobs or job lots.**
9. **Assuming that the overapplied or underapplied overhead is immaterial, it is closed to the Cost of Goods Sold account. However, if the amount is material—meaning it would change business decisions that rely on the information—then the amount of overapplied or underapplied overhead is allocated to goods in process, finished goods, and cost of goods sold (using an allocation base such as direct labor).**
10. **This production run should be accounted for as a job lot (batch). Although individual iPods could be viewed as individual jobs, the costs of tracking this detailed information would outweigh the benefits. Determining the cost of the batch should provide management and employees with sufficient information about this product for all decision making purposes.**
11. **A predetermined factory overhead rate must be calculated for at least two reasons: (1) Not all costs are known in advance, yet the costs must be applied to products during the current period. (2) A predetermined rate is used to spread indirect costs to products and/or services throughout an accounting period, where overhead costs are not incurred uniformly throughout the period and production may not be uniform throughout the period. For instance, property taxes on the factory building of \$20,000 may be paid in July, but some of that \$20,000 must be allocated to all items produced during the year, January through December. A *predetermined* rate is necessary, because we must estimate the rate at the beginning of the year, based on estimated costs and activity, before the period begins.**
12. **Each patient in a hospital can be viewed as a “job.” In this case, a job order cost sheet would be used to capture cost of direct materials (supplies, medicine, and so forth), direct labor, and hospital overhead.**
13. **Each of the 30 luxury motorcycles will likely be accounted for as an individual job. Although similar in many respects, each would have custom features that would impact costs. As the luxury motorcycles are shipped to dealers each will have a separate invoice detailing the cost associated with producing that motorcycle. Also, the price of a custom-made motorcycle is probably large enough (in the area of \$20,000 to \$50,000) that each would be accounted for individually.**
14. **Research In Motion employees can use job cost sheets to accumulate the costs (e.g. labor and materials) used on each job. Managers can use this job cost information to monitor whether Research In Motion is meeting its target costs and producing reasonable profits. This information can be used to adjust the prices of certain services and/or cease providing certain services if the costs cannot be controlled to yield a reasonable profit.**

QUICK STUDIES

Quick Study 2-1 (5 minutes)

Manufactured as a job: 1, 2, 4
Manufactured as a job lot: 3, 5, 6

Quick Study 2-2 (5 minutes)

Direct materials, direct labor, and factory overhead are the three types of costs typically recorded on a job cost sheet. Managers can use job cost sheets to monitor costs incurred to date and to predict and control costs for each job.

Quick Study 2-3 (15 minutes)

Raw Materials Inventory	70,000	
Cash		70,000
<i>To record raw material purchases.</i>		
Factory Overhead	22,000	
Raw Materials Inventory		22,000
<i>To record raw materials used in production.</i>		
Goods in Process Inventory	42,000	
Raw Materials Inventory		42,000
<i>To record raw materials used in production.</i>		

Quick Study 2-4 (10 minutes)

Factory Payroll.....	120,000	
Cash		120,000
<i>To record factory payroll.</i>		
Goods in Process Inventory	90,000	
Factory Overhead	30,000	
Factory Payroll.....		120,000
<i>To record direct and indirect labor.</i>		

Quick Study 2-5 (10 minutes)

1. Factory overhead, \$129,500 / Direct labor, \$605,000 = 21.4%
2. Factory overhead, \$129,500 / Direct materials, \$672,000 = 19.3%

Quick Study 2-6 (10 minutes)

Goods in Process Inventory (Job lot).....	135,000	
Factory Overhead		135,000
<i>To apply overhead to job lot (\$90,000 x 150%).</i>		

Quick Study 2-7 (15 minutes)

Cost of Goods Sold	45,000	
Factory Overhead*		45,000
<i>To assign underapplied overhead.</i>		

*Computation of over- or underapplied overhead

Actual overhead.....	\$745,000	
Overhead applied (\$500,000 X 140%).....	<u>700,000</u>	
Underapplied overhead.....	<u>\$ 45,000</u>	

Quick Study 2-8 (5 minutes)

Factory Overhead	6,000	
Cost of Goods Sold*		6,000
<i>To assign overapplied overhead.</i>		

***Computation of over- or underapplied overhead**

Actual overhead (total debits)	\$325,000
Applied overhead (total credits)	<u>331,000</u>
Overapplied overhead	<u>\$ 6,000</u>

Quick Study 2-9 (10 minutes)

JOB COST SHEET	
Direct labor (\$60 X 50)	\$3,000
Overhead (\$95 X 50)	<u>4,750</u>
Total cost	<u>\$7,750</u>

Quick Study 2-10 (10 minutes)

$$\text{Rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated direct materials}} = \frac{\$218,750}{\$175,000} = \underline{125\%}$$

Quick Study 2-11 (10 minutes)

Finished Goods Inventory	13,500	
Goods in Process Inventory		13,500
<i>To transfer cost of completed job to Fin. Goods.</i>		
Cost of Goods Sold	13,500	
Finished Goods Inventory		13,500
<i>To transfer cost of delivered job to COGS.</i>		
Cash	18,900	
Sales		18,900
<i>To record sales price of delivered job.</i>		

Quick Study 2-12 (5 minutes)

Since each car is custom-ordered, Porsche produces in jobs rather in job lots (production of more than one unit of a custom product).

EXERCISES

Exercise 2-1 (10 minutes)

- | | | |
|-------------|-------------|-------------|
| 1. B | 3. E | 5. A |
| 2. D | 4. C | 6. F |

Exercise 2-2 (10 minutes)

- | | | | |
|-------------|-------------|-------------|-------------|
| 1. E | 3. D | 5. F | 7. B |
| 2. G | 4. C | 6. A | |

Exercise 2-3 (15 minutes)

JOB COST SHEET		
Direct materials cost		
Q-4698	\$1,350	
Q-4725	<u>1,100</u>	\$2,450
Direct labor cost		
W-3393	700	
W-3479	550	
W-3559	<u>400</u>	1,650
Overhead (\$1,650 X 140%)		<u>2,310</u>
Total cost		<u>\$6,410</u>

Exercise 2-4 (25 minutes)

1. The cost of direct materials requisitioned in the month equals the total direct materials costs accumulated on the three jobs less the amount of direct materials cost assigned to Job 102 in May:

Job 102	\$30,000	
Less prior costs	<u>(12,000)</u>	\$ 18,000
Job 103		66,000
Job 104		<u>54,000</u>
Total materials used (requisitioned)		<u>\$138,000</u>

Exercise 2-4 (Continued)

2. Direct labor cost incurred in the month equals the total direct labor costs accumulated on the three jobs less the amount of direct labor cost assigned to Job 102 in May:

Job 102	\$16,000	
Less prior costs	<u>(3,600)</u>	\$ 12,400
Job 103		28,400
Job 104		<u>42,000</u>
Total direct labor		<u>\$ 82,800</u>

3. The predetermined overhead rate equals the ratio between the amount of overhead assigned to the jobs divided by the amount of direct labor cost assigned to them. Since the same rate is used for all jobs started and completed within a month, the ratio for any one of them equals the rate that was applied. This table shows the ratio for jobs 102 and 104:

	Job 102	Job 104
Overhead	\$ 8,000	\$21,000
Direct labor	16,000	42,000
Ratio	50%	50%

4. The cost transferred to finished goods in June equals the total costs of the two completed jobs for the month, which are Jobs 102 and 103:

	Job 102	Job 103	Total
Direct materials	\$30,000	\$ 66,000	\$ 96,000
Direct labor	16,000	28,400	44,400
Overhead	<u>8,000</u>	<u>14,200</u>	<u>22,200</u>
Total transferred cost	<u>\$54,000</u>	<u>\$108,600</u>	<u>\$162,600</u>

Exercise 2-5 (15 minutes)

1.

$$\text{Rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated direct labor}} = \frac{\$756,000}{\$540,000} = \underline{\underline{140\%}}$$

2.

Direct materials	\$15,600
Direct labor	3,200
Overhead (\$3,200 x 140%)	<u>4,480</u>
Total cost of Job No. 13-56	<u>\$23,280</u>

Exercise 2-6 (20 minutes)

1.

$$\text{Rate} = \frac{\text{Overhead costs}}{\text{Direct material costs}} = \frac{\$450,000}{\$1,500,000} = \underline{\underline{30\%}}$$

2. Total cost of job in process (given)	\$ 90,000
Less materials cost of job in process (given)	(30,000)
Less overhead applied (30,000 x 30%)	<u>(9,000)</u>
Direct labor cost	<u>\$ 51,000</u>

Exercise 2-7 (30 minutes)

1. Cost of direct materials used	
Beginning raw materials inventory	\$ 40,000
Plus purchases	<u>189,000</u>
Raw materials available	229,000
Less ending raw materials inventory	<u>(50,000)</u>
Total raw materials used	179,000
Less indirect materials used	<u>12,000</u>
Cost of direct materials used	<u>\$167,000</u>
2. Cost of direct labor used	
Total factory payroll	\$400,000
Less indirect labor	<u>(75,000)</u>
Cost of direct labor used	<u>\$325,000</u>

Exercise 2-7 (continued)**3. Cost of goods manufactured**

Beginning goods in process inventory.....	\$	9,600
Plus direct materials		167,000
Plus direct labor		325,000
Plus overhead applied (65% of DL cost).....		<u>211,250</u>
Total cost of goods in process		712,850
Less ending goods in process inventory		<u>(19,500)</u>
Cost of goods manufactured	\$	<u>693,350</u>

4. Cost of goods sold

Beginning finished goods inventory	\$	60,000
Plus cost of goods manufactured		693,350
Less ending finished goods inventory.....		<u>(33,200)</u>
Cost of goods sold.....	\$	<u>720,150</u>

5. Gross profit

Sales	\$1,200,000
Cost of goods sold.....	<u>(720,150)</u>
Gross profit.....	<u>\$ 479,850</u>

6. Overapplied or underapplied overhead

Indirect materials.....	\$	12,000
Indirect labor.....		75,000
Other overhead costs		<u>100,500</u>
Total actual overhead incurred		187,500
Overhead applied		<u>211,250</u>
Overapplied overhead.....	\$	<u>23,750</u>

Exercise 2-8 (10 minutes)

1.	Raw Materials Inventory	189,000	
	Cash.....		189,000
	<i>To record materials purchases.</i>		
2.	Goods in Process Inventory	167,000	
	Raw Materials Inventory		167,000
	<i>To assign direct materials to jobs.</i>		
3.	Factory Overhead.....	12,000	
	Raw Materials Inventory		12,000
	<i>To record indirect materials.</i>		

Exercise 2-9 (10 minutes)

1.	Factory Payroll	400,000	
	Cash.....		400,000
	<i>To record factory payroll.</i>		
2.	Goods in Process Inventory	325,000	
	Factory Payroll		325,000
	<i>To assign direct labor to jobs.</i>		
3.	Factory Overhead.....	75,000	
	Factory Payroll		75,000
	<i>To record indirect labor.</i>		

Exercise 2-10 (10 minutes)

1.	Factory Overhead.....	100,500	
	Other Accounts		100,500
	<i>To record other factory overhead.</i>		
2.	Goods in Process Inventory	211,250	
	Factory Overhead.....		211,250
	<i>To apply overhead to jobs.</i>		

Exercise 2-11 (10 minutes)

Factory Overhead.....	23,750	
Cost of Goods Sold.....		23,750
<i>To allocate (close) overapplied overhead to cost of goods sold. Applied overhead equals \$325,000 X 65% = \$211,250.</i>		

Exercise 2-12 (15 minutes)

1.	Factory Overhead.....	11,200	
	Cost of Goods Sold.....		11,200
	<i>To allocate overapplied overhead.</i>		
2.	Factory Overhead.....	4,800	
	Cost of Goods Sold.....		4,800
	<i>To allocate overapplied overhead.</i>		

Exercise 2-13 (25 minutes)

1.	Predetermined overhead rate	
	Estimated overhead costs	\$1,800,000
	Estimated direct labor costs	\$ 450,000
	Rate (\$1,800,000/\$450,000)	<u>400%</u>

2. & 3.

Factory Overhead	
Incurred	1,770,000
Applied*	1,780,000
	<u>Overapplied</u>
	<u>10,000</u>

*Overhead applied to jobs = 400% x \$445,000 = \$1,780,000

4.			
Dec. 31	Factory Overhead.....	10,000	
	Cost of Goods Sold.....		10,000
	<i>To allocate overapplied overhead.</i>		

Exercise 2-14 (35 minutes)

1. **Predetermined overhead rate**

Estimated overhead costs	\$600,000
Estimated direct labor costs.....	\$500,000
Rate (Overhead/Direct labor)	<u>120%</u>

2. & 3.

Factory Overhead			
Incurred	680,000	Applied*	672,000
Underapplied.....	<u>8,000</u>		

*Overhead applied to jobs = 120% x \$560,000 = \$672,000

4.

Dec. 31	Cost of Goods Sold	8,000	
	Factory Overhead.....		8,000
	<i>To allocate underapplied overhead.</i>		

Exercise 2-15 (30 minutes)

1. **Overhead rate = Total overhead costs applied / Total direct labor costs**
= \$1,000,000 / \$2,500,000 = 40%

2.

Total cost of goods in process inventory	\$ 57,000
Deduct: Direct labor	(18,000)
Deduct: Factory overhead (\$18,000 X 40%)	<u>(7,200)</u>
Direct materials costs	<u>\$ 31,800</u>

3.

Total cost of finished goods inventory	\$337,485
Deduct: Direct materials costs.....	<u>(137,485)</u>
Direct labor and factory overhead costs.....	<u>\$200,000</u>

Exercise 2-15 (concluded)

We also know that the total of direct labor costs (x) and factory overhead costs ($0.4x$) equals \$200,000. Thus, to get the individual amounts we need to solve: [$x + 0.4x = \$200,000$]. The solution is:

Direct labor costs = \$142,857

Factory overhead costs = \$142,857 x 0.4 = \$57,143 (rounded)

Exercise 2-16 (35 minutes)

$$1. \text{ Overhead rate} = \frac{\text{Total estimated overhead cost}}{\text{Total estimated direct labor cost}}$$

$$= \$360,000 / \$300,000 = \underline{120\%}$$

2. Cost of the two ending inventories

	Goods in Process			Finished Goods		
	Cost per Unit	Units	Total Cost	Cost per Unit	Units	Total Cost
Direct materials.....	\$10.00	4,500	\$ 45,000	\$12.00	11,700	\$140,400
Direct labor.....	7.00	4,500	31,500	9.00	11,700	105,300
Overhead (120% of direct labor)	<u>8.40</u>	4,500	<u>37,800</u>	<u>10.80</u>	11,700	<u>126,360</u>
Total	<u>\$25.40</u>		<u>\$114,300</u>	<u>\$31.80</u>		<u>\$372,060</u>

3.*Step 1***Cost of goods manufactured**

Direct materials cost.....	\$ 460,000
Direct labor cost.....	277,000
Factory overhead cost.....	<u>332,400</u>
Total manufacturing cost	1,069,400
Add beginning goods in process	<u>0</u>
Total cost of goods in process	1,069,400
Less ending goods in process	<u>(114,300)</u>
Cost of goods manufactured	<u>\$ 955,100</u>

Exercise 2-16 (concluded)**Step 2****Cost of goods sold**

Beginning finished goods	\$ 0
Add cost of goods manufactured	<u>955,100</u>
Goods available for sale	955,100
Less ending finished goods	<u>(372,060)</u>
Cost of goods sold	<u><u>\$583,040</u></u>

Exercise 2-17 (35 minutes)**1. Estimated cost of the architectural job**

Labor type	Estimated hours	Hourly rate	Total cost
Architects	200	\$300	\$ 60,000
Staff	400	75	30,000
Clerical	700	20	<u>14,000</u>
Total labor cost			104,000
Overhead @ 160% of direct labor cost			<u>166,400</u>
Total estimated cost			<u><u>\$270,400</u></u>

2. Friesen should first determine an estimated selling price, based on its cost and desired profit for this job.

Total estimated cost	\$270,400
Desired profit	<u>80,000</u>
Estimated selling price	<u><u>\$350,400</u></u>

This \$350,400 price may or may not be its bid. It must consider past experiences and competition. It might make the bid at the low end of what it believes the competition will bid. By bidding at about \$325,000, the profit on the job will only be \$54,600 (\$325,000 – \$270,400). While this may allow Friesen to get the job, it must consider several other factors. Among them:

- a. How accurate are its estimates of costs? If costs are understated, the bid may be too low. This will cause profits to be lower than anticipated. If costs are overestimated, it may bid too high and lose the job.
- b. How accurate is the estimate of the competition's probable bidding range? If it has underestimated the low end, it may be unnecessarily underbidding. If it has overestimated the low end, it may lose the job.

Exercise 2-17 (concluded)

- c. Is it willing to meet the expected low bid of the competition? In the example above, would it be acceptable to earn only \$54,600 on this job (about a 17% gross profit ratio), rather than the normal \$80,000 (about a 23% gross profit ratio)? Can it earn a better profit on another job?

There are no exact answers to these questions, but Friesen must consider these and other factors before it submits the bid.

Exercise 2-18 (15 minutes)

(1) (a)	Raw Materials Inventory	3,108	
	Accounts Payable.....		3,108
	<i>To record raw material purchases.</i>		
(b)	Goods in Process Inventory*	3,106	
	Raw Materials Inventory		3,106
	<i>To record raw materials used in production.</i>		

* The amount of raw materials used in production is computed from the Raw Materials Inventory account. Beginning balance plus purchases minus ending balance equals raw materials used in production, or (in millions), €83 + €3,108 - €85 = €3,106.

- (2) The amount of materials purchased is almost equal to the amount of materials used in production. This means the company holds very little inventory of raw materials, consistent with lean manufacturing.

PROBLEM SET A

Problem 2-1A (80 minutes)

Part 1 Total manufacturing costs and the costs assigned to each job

	306	307	308	April Total
From March				
Direct materials	\$ 14,000	\$ 18,000		
Direct labor	18,000	16,000		
Applied overhead*	<u>9,000</u>	<u>8,000</u>		
Beginning goods in process	41,000	42,000		\$ 83,000
For April				
Direct materials	100,000	170,000	\$ 80,000	350,000
Direct labor	30,000	56,000	120,000	206,000
Applied overhead*	<u>15,000</u>	<u>28,000</u>	<u>60,000</u>	<u>103,000</u>
Total costs added in April..	<u>145,000</u>	<u>254,000</u>	<u>260,000</u>	<u>659,000</u>
Total costs	<u>\$186,000</u>	<u>\$296,000</u>	<u>\$260,000</u>	<u>\$742,000</u>

*Equals 50% of direct labor cost.

Part 2 Journal entries for April

a.	Raw Materials Inventory	400,000	
	Accounts Payable		400,000
	<i>To record materials purchases.</i>		
	Factory Payroll	220,000	
	Cash		220,000
	<i>To record factory payroll.</i>		
	Factory Overhead	30,000	
	Raw Materials Inventory		30,000
	<i>To record indirect materials.</i>		
	Factory Overhead	14,000	
	Factory Payroll		14,000
	<i>To record indirect labor.</i>		
	Factory Overhead	20,000	
	Cash		20,000
	<i>To record factory rent.</i>		

Problem 2-1A (Continued)

a. [continued from prior page]

Factory Overhead	12,000	
Cash		12,000
<i>To record factory utilities.</i>		

Factory Overhead	30,000	
Accumulated Depreciation—Factory Equip ...		30,000
<i>To record other factory overhead.</i>		

b. Goods in Process Inventory	350,000	
Raw Materials Inventory		350,000
<i>To assign direct materials to jobs.</i>		

Goods in Process Inventory	206,000	
Factory Payroll		206,000
<i>To assign direct labor to jobs.</i>		

Goods in Process Inventory	103,000	
Factory Overhead		103,000
<i>To apply overhead to jobs.</i>		

c. Finished Goods Inventory (306 & 307)	482,000	
Goods in Process Inventory		482,000
<i>To record jobs completed (\$186,000 + \$296,000).</i>		

d. Cost of Goods Sold (306)	186,000	
Finished Goods Inventory		186,000
<i>To record cost of sale of job.</i>		

e. Cash	380,000	
Sales		380,000
<i>To record sale of job.</i>		

f. Cost of Goods Sold	3,000	
Factory Overhead*		3,000
<i>To assign underapplied overhead.</i>		

*Overhead applied to jobs		\$103,000
Overhead incurred		
Indirect materials	\$30,000	
Indirect labor	14,000	
Factory rent	20,000	
Factory utilities	12,000	
Factory equip. depreciation	<u>30,000</u>	
Underapplied overhead		<u>\$ 3,000</u>

Problem 2-1A (Continued)**Part 3**

WINFREY COMPANY	
Manufacturing Statement	
For Month Ended April 30	
Direct materials used	\$ 350,000
Direct labor used	206,000
Factory overhead	
Indirect materials.....	\$30,000
Indirect labor.....	14,000
Factory rent.....	20,000
Factory utilities.....	12,000
Depreciation of equipment.....	<u>30,000</u>
	<u>106,000</u>
Total manufacturing costs	662,000
Add goods in process March 31 (Jobs 306 & 307).....	<u>83,000</u>
Total cost of goods in process	745,000
Deduct goods in process, April 30 (Job 308)	(260,000)
Deduct underapplied overhead*	<u>(3,000)</u>
Cost of goods manufactured (Jobs 306 & 307)	<u>\$ 482,000</u>

*Alternatively, the underapplied overhead can be listed among factory overhead items.

Part 4**Gross profit on the income statement for the month ended April 30**

Sales	\$ 380,000
Cost of goods sold (\$186,000 + \$3,000).....	<u>(189,000)</u>
Gross profit	<u>\$ 191,000</u>

Presentation of inventories on the April 30 balance sheet

Inventories	
Raw materials	\$ 170,000*
Goods in process (Job 308).....	260,000
Finished goods (Job 307)	<u>296,000</u>
Total inventories	<u>\$ 726,000</u>

* Beginning raw materials inventory	\$ 150,000
Purchases	400,000
Direct materials used	(350,000)
Indirect materials used.....	<u>(30,000)</u>
Ending raw materials inventory.....	<u>\$ 170,000</u>

Part 5

Overhead is underapplied by \$3,000, meaning that individual jobs or batches of jobs are under-costed. Thus, profits at the job (and batch) level are overstated.

Problem 2-2A (75 minutes)

Part 1

a.			
Dec. 31	Goods in Process Inventory	12,200	
	Raw Materials Inventory		12,200
	<i>To record direct materials costs for Jobs 402 and 404 (\$4,600 + 7,600).</i>		
b.			
Dec. 31	Goods in Process Inventory	13,000	
	Factory Payroll		13,000
	<i>To record direct labor costs for Jobs 402 and 404 (\$5,000 + \$8,000).</i>		
c.			
Dec. 31	Goods in Process Inventory	26,000	
	Factory Overhead.....		26,000
	<i>To allocate overhead to Jobs 402 and 404 at 200% of direct labor cost assigned.</i>		
d.			
Dec. 31	Factory Overhead.....	2,100	
	Raw Materials Inventory		2,100
	<i>To add cost of indirect materials to actual factory overhead.</i>		
e.			
Dec. 31	Factory Overhead.....	3,000	
	Factory Payroll		3,000
	<i>To add cost of indirect labor to actual factory overhead.</i>		

Part 2

Revised Factory Overhead account

Ending balance from trial balance.....	\$27,000	debit
Applied to Jobs 402 and 404	(26,000)	credit
Additional indirect materials	2,100	debit
Additional indirect labor	3,000	debit
Underapplied overhead	<u>\$ 6,100</u>	debit

Dec. 31	Cost of Goods Sold.....	6,100	
	Factory Overhead.....		6,100
	<i>To remove \$6,100 of underapplied overhead from the Factory Overhead account and add it to cost of goods sold.</i>		

Problem 2-2A (continued)**Part 3**

THAI BAY COMPANY		
Trial Balance		
December 31, 2011		
	<i>Debit</i>	<i>Credit</i>
Cash	\$ 48,000	
Accounts receivable	42,000	
Raw materials inventory *	11,700	
Goods in process inventory **	51,200	
Finished goods inventory	9,000	
Prepaid rent	3,000	
Accounts payable		\$ 10,500
Notes payable		13,500
Common stock		30,000
Retained earnings		87,000
Sales		180,000
Cost of goods sold (\$105,000 + \$6,100).....	111,100	
Factory payroll	0	
Factory overhead	0	
Operating expenses.....	<u>45,000</u>	
Totals	<u>\$321,000</u>	<u>\$321,000</u>

*** Raw materials inventory**

Balance per trial balance	\$26,000
Less: Amounts recorded for Jobs 402 and 404	(12,200)
Less: Indirect materials	<u>(2,100)</u>
Ending balance	<u>\$11,700</u>

**** Goods in process inventory**

	<u>Job 402</u>	<u>Job 404</u>	<u>Total</u>
Direct materials	\$ 4,600	\$ 7,600	\$12,200
Direct labor	5,000	8,000	13,000
Overhead	10,000	16,000	26,000
Total cost	<u>\$19,600</u>	<u>\$31,600</u>	<u>\$51,200</u>

Problem 2-2A (continued)**Part 4**

THAI BAY COMPANY	
Income Statement	
For Year Ended December 31, 2011	
Sales.....	\$180,000
Cost of goods sold	<u>(111,100)</u>
Gross profit	68,900
Operating expenses.....	<u>(45,000)</u>
Net income.....	<u>\$ 23,900</u>

THAI BAY COMPANY	
Balance Sheet	
December 31, 2011	
ASSETS	
Cash	\$ 48,000
Accounts receivable	42,000
Inventories	
Raw materials inventory	\$11,700
Goods in process inventory	51,200
Finished goods inventory	<u>9,000</u> 71,900
Prepaid rent	<u>3,000</u>
Total assets	<u>\$164,900</u>
LIABILITIES AND EQUITY	
Accounts payable	\$ 10,500
Notes payable.....	<u>13,500</u>
Total liabilities.....	24,000
Common stock.....	30,000
Retained earnings (\$87,000 + \$23,900).....	<u>110,900</u>
Total stockholders' equity	<u>140,900</u>
Total liabilities and equity.....	<u>\$164,900</u>

Problem 2-2A (concluded)

Part 5

This \$2,100 error would cause the costs for Job 404 to be understated. Since Job 404 is in process at the end of the period, goods in process inventory and total assets would both be understated on the balance sheet. In addition, in correcting the error the over- or underapplied overhead would change by \$2,100. That is, if overhead is underapplied by, say, \$6,100, this amount would decrease by \$2,100. Since underapplied overhead is charged directly to cost of goods sold, then cost of goods sold would decrease by \$2,100 and net income would increase by \$2,100.

Problem 2-3A (70 minutes)

Part 1

JOB COST SHEETS

Job No. 136	
Materials	\$30,000
Labor	8,000
Overhead	<u>16,000</u>
Total cost	<u>\$54,000</u>

Job No. 138	
Materials	\$12,000
Labor	25,000
Overhead	<u>50,000</u>
Total cost	<u>\$87,000</u>

Job No. 137	
Materials	\$20,000
Labor	7,000
Overhead	<u>14,000</u>
Total cost	<u>\$41,000</u>

Job No. 139	
Materials	\$14,000
Labor	26,000
Overhead	<u>52,000</u>
Total cost	<u>\$92,000</u>

Job No. 140	
Materials	\$ 4,000
Labor	2,000
Overhead	<u>4,000</u>
Total cost	<u>\$10,000</u>

Part 2

- a. Raw Materials Inventory 125,000
 Accounts Payable 125,000
 To record materials purchases.

- b. Factory Payroll 84,000
 Cash..... 84,000
 To record factory payroll.

- c. Factory Overhead..... 11,000

	Cash		11,000
	<i>To record other factory overhead.</i>		
d.	Goods in Process Inventory	80,000	
	Factory Overhead	12,000	
	Raw Materials Inventory		92,000
	<i>To record direct & indirect materials.</i>		
Problem 2-3A (Continued)			
e.	[continued from prior page]		
	Goods in Process Inventory	68,000	
	Factory Overhead	16,000	
	Factory Payroll		84,000
	<i>To record direct & indirect labor.</i>		
f.	Goods in Process Inventory	118,000	
	Factory Overhead		118,000
	<i>To apply overhead to jobs</i> <i>[((\$8,000 + \$25,000 + \$26,000) x 200%).]</i>		
g.	Finished Goods Inventory	233,000	
	Goods in Process Inventory		233,000
	<i>To record completion of jobs</i> <i>(\$54,000 + \$87,000 + \$92,000).</i>		
h.	Accounts Receivable	340,000	
	Sales		340,000
	<i>To record sales on account.</i>		
	Cost of Goods Sold	141,000	
	Finished Goods Inventory		141,000
	<i>To record cost of sales (\$54,000 + \$87,000).</i>		
i.	Factory Overhead	96,000	
	Accum. Depreciation—Factory Building		37,000
	Accum. Depreciation—Factory Equipment ...		21,000
	Prepaid Insurance		7,000
	Property Taxes Payable		31,000
	<i>To record other factory overhead.</i>		
j.	Goods in Process Inventory	18,000	
	Factory Overhead		18,000
	<i>To apply overhead to jobs</i> <i>[((\$7,000 + \$2,000) x 200%).]</i>		

Problem 2-3A (Continued)**Part 3****GENERAL LEDGER ACCOUNTS**

Raw Materials Inventory		Factory Payroll	
(a) 125,000	(d) 92,000	(b) 84,000	(e) 84,000
Bal. 33,000		Bal. 0	

Goods in Process Inventory		Factory Overhead	
(d) 80,000	(g) 233,000	(c) 11,000	(f) 118,000
(e) 68,000		(d) 12,000	(j) 18,000
(f) 118,000		(e) 16,000	
(j) 18,000		(i) 96,000	
Bal. 51,000			Bal. 1,000

Finished Goods Inventory		Cost of Goods Sold	
(g) 233,000	(h) 141,000	(h) 141,000	
Bal. 92,000		Bal. 141,000	

Part 4**Reports of Job Costs***

Goods in Process Inventory	
Job 137	\$ 41,000
Job 140	10,000
Balance	<u>\$ 51,000</u>
Finished Goods Inventory	
Job 139	\$ 92,000
Balance	<u>\$ 92,000</u>
Cost of Goods Sold	
Job 136	\$ 54,000
Job 138	87,000
Balance	<u>\$141,000</u>

*Individual totals reconcile with account balances in part 3.

Problem 2-4A (35 minutes)

Part 1

a. Predetermined overhead rate

$$\frac{\text{Estimated overhead costs}}{\text{Estimated direct labor cost}} = \frac{\$750,000}{[50 \times 2,000 \times \$15]} = \frac{\$750,000}{\$1,500,000} = \underline{50\%}$$

b. Overhead costs charged to jobs

Job No.	Direct Labor	Applied Overhead (50%)
201	\$ 354,000	\$177,000
202	330,000	165,000
203	175,000	87,500
204	420,000	210,000
205	184,000	92,000
206	<u>10,000</u>	<u>5,000</u>
Total	<u>\$1,473,000</u>	<u>\$736,500</u>

c. Overapplied or underapplied overhead determination

Actual overhead cost.....	\$ 725,000
Less applied overhead cost.....	<u>736,500</u>
Overapplied overhead	<u>(\$ 11,500)</u>

Part 2

Dec. 31	Factory Overhead.....	11,500	
	Cost of Goods Sold.....		11,500
	<i>To assign overapplied overhead.</i>		

Problem 2-5A (80 minutes)

JOB COST SHEET							
Customer's Name		Global Company			Job No.		102
Direct Materials		Direct Labor		Overhead Costs Applied			
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#35	16,000	#1-10	40,000	May ---	70%	28,000
	#36	9,600					
					SUMMARY OF COSTS		
					Dir. Materials		25,600
					Dir. Labor.....		40,000
					Overhead.....		<u>28,000</u>
					Total Cost of Job ...		<u>93,600</u>
Total		25,600	Total				
					<i>FINISHED</i>		

JOB COST SHEET							
Customer's Name		Rolf Company			Job No.		103
Direct Materials		Direct Labor		Overhead Costs Applied			
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#37	8,000	#11-30	32,000	May ---	70%	22,400
	#38	4,800					
					SUMMARY OF COSTS		
					Dir. Materials		
					Dir. Labor.....		
					Overhead.....		_____
					Total Cost of Job ...		=====
Total			Total				

Problem 2-5A (Continued)

MATERIALS LEDGER CARD											
Item		Material M									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									120	200	24,000
	#426	150	200	30,000					270	200	54,000
					#35	80	200	16,000	190	200	38,000
					#37	40	200	8,000	150	200	30,000

MATERIALS LEDGER CARD											
Item		Material R									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									80	160	12,800
	#427	70	160	11,200					150	160	24,000
					#36	60	160	9,600	90	160	14,400
					#38	30	160	4,800	60	160	9,600

MATERIALS LEDGER CARD											
Item		Paint									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									44	72	3,168
					#39	12	72	864	32	72	2,304

Problem 2-5A (Continued)

GENERAL JOURNAL			
a.	Raw Materials Inventory	41,200	
	Accounts Payable.....		41,200
	<i>To record materials purchases (\$30,000 + \$11,200).</i>		
d.	Factory Payroll.....	84,000	
	Cash		84,000
	<i>To record factory payroll.</i>		
	Factory Overhead	36,000	
	Cash		36,000
	<i>To record other factory overhead.</i>		
e.	Finished Goods Inventory	93,600	
	Goods in Process		93,600
	<i>To record completion of job.</i>		
f.	Accounts Receivable	290,000	
	Sales		290,000
	<i>To record sales on account.</i>		
	Cost of Goods Sold	93,600	
	Finished Goods Inventory		93,600
	<i>To record cost of sales.</i>		
h.	Goods in Process Inventory*	38,400	
	Factory Overhead	864	
	Raw Materials Inventory		39,264
	<i>To record direct & indirect materials.</i>		
	<i>*($\\$16,000 + \\$9,600 + \\$8,000 + \\$4,800$)</i>		
i.	Goods in Process Inventory*	72,000	
	Factory Overhead	12,000	
	Factory Payroll.....		84,000
	<i>To record direct & indirect labor.</i>		
	<i>*($\\$40,000 + 32,000$)</i>		
j.	Goods in Process Inventory	50,400	
	Factory Overhead		50,400
	<i>To apply overhead ($\\$28,000 + 22,400$).</i>		

Problem 2-5A (Continued)**GENERAL LEDGER**

Cash		Accounts Receivable	
	(d) 84,000	(f) 290,000	
	(d) 36,000		
	120,000		
Sales		Cost of Goods Sold	
	(f) 290,000	(f) 93,600	
Finished Goods Inventory		Accounts Payable	
(e) 93,600	(f) 93,600		(a) 41,200
0			
Raw Materials Inventory		Goods in Process Inventory	
Bal. 39,968	(h) 39,264	(h) 38,400	(e) 93,600
(a) 41,200		(i) 72,000	
41,904		(j) 50,400	
		67,200	
Factory Overhead		Factory Payroll	
(d) 36,000	(j) 50,400	(d) 84,000	(i) 84,000
(h) 864		0	
(i) 12,000			
	1,536		

Factory Overhead Subsidiary Ledger

Indirect Materials		Indirect Labor	
(b) 864		(c) 12,000	
Miscellaneous Overhead			
(d) 36,000			

Problem 2-5A (Continued)**Computation notes**

1. Balance in Raw Materials Inventory	
Material M.....	\$30,000
Material R	9,600
Paint	<u>2,304</u>
Total raw materials	<u>\$41,904</u>
2. Balance in Goods in Process Inventory	
Materials.....	\$12,800
Labor	32,000
Overhead.....	<u>22,400</u>
Total goods in process.....	<u>\$67,200</u>
3. Factory Overhead	
Actual Factory Overhead	
Miscellaneous overhead	\$ 36,000
Indirect materials	864
Indirect labor	<u>12,000</u>
Total actual factory overhead	48,864
Factory overhead applied	<u>50,400</u>
Overapplied overhead	<u>\$(1,536)</u>

PROBLEM SET B

Problem 2-1B (80 minutes)

Part 1 Total manufacturing costs and the costs assigned to each job

	114	115	116	Sept. Total
From August				
Direct materials	\$ 4,000	\$ 6,000		
Direct labor	2,000	2,200		
Applied overhead*	<u>2,600</u>	<u>2,860</u>		
Beginning goods in process ..	8,600	11,060		\$ 19,660
For September				
Direct materials	10,000	30,000	\$16,000	56,000
Direct labor	16,000	28,000	20,000	64,000
Applied overhead*	<u>20,800</u>	<u>36,400</u>	<u>26,000</u>	<u>83,200</u>
Total costs added in Sept	<u>46,800</u>	<u>94,400</u>	<u>62,000</u>	<u>203,200</u>
Total costs	<u>\$55,400</u>	<u>\$105,460</u>	<u>\$62,000</u>	<u>\$222,860</u>

*Equals 130% of direct labor cost.

Part 2 Journal entries for September

a.	Raw Materials Inventory	60,000	
	Accounts Payable		60,000
	<i>To record materials purchases.</i>		
	Factory Payroll	68,000	
	Cash		68,000
	<i>To record factory payroll.</i>		
	Factory Overhead.....	6,000	
	Raw Materials Inventory		6,000
	<i>To record indirect materials.</i>		
	Factory Overhead.....	4,000	
	Factory Payroll		4,000
	<i>To record indirect labor.</i>		
	Factory Overhead.....	24,000	
	Cash		24,000
	<i>To record other factory overhead.</i>		
	Factory Overhead.....	22,000	
	Cash		22,000
	<i>To record other factory overhead.</i>		

Problem 2-1B (Continued)

a. [continued from prior page]

Factory Overhead.....	25,000	
Accum. Depreciation—Factory Equip.....		25,000
<i>To record other factory overhead.</i>		

b. Goods in Process Inventory	56,000	
Raw Materials Inventory		56,000
<i>To assign direct materials to jobs.</i>		

Goods in Process Inventory	64,000	
Factory Payroll		64,000
<i>To assign direct labor to jobs.</i>		

Goods in Process Inventory	83,200	
Factory Overhead.....		83,200
<i>To apply overhead to jobs.</i>		

c. Finished Goods Inventory.....	160,860	
Goods in Process Inventory		160,860
<i>To record jobs completed (\$55,400 + \$105,460).</i>		

d. Cost of Goods Sold.....	55,400	
Finished Goods Inventory.....		55,400
<i>To record cost of sale of job.</i>		

e. Cash	100,000	
Sales.....		100,000
<i>To record sale of job.</i>		

f. Factory Overhead*	2,200	
Cost of Goods Sold.....		2,200
<i>To assign overapplied overhead.</i>		

*Overhead applied to jobs		\$83,200
Overhead incurred		
Indirect materials.....	\$ 6,000	
Indirect labor.....	4,000	
Factory rent.....	24,000	
Factory utilities.....	22,000	
Factory equip. depreciation	<u>25,000</u>	
		<u>81,000</u>
Overapplied overhead		<u>\$ 2,200</u>

Problem 2-1B (Continued)**Part 3**

PAK COMPANY	
Manufacturing Statement	
For Month Ended September 30	
Direct materials used	\$ 56,000
Direct labor used	64,000
Factory overhead	
Indirect materials.....	\$ 6,000
Indirect labor.....	4,000
Factory rent.....	24,000
Factory utilities.....	22,000
Depreciation of equipment.....	<u>25,000</u>
	<u>81,000</u>
Total manufacturing costs	201,000
Add goods in process August 31 (114 & 115)	<u>19,660</u>
Total cost of goods in process	220,660
Deduct goods in process, September 30 (116)	(62,000)
Add overapplied overhead*	<u>2,200</u>
Cost of goods manufactured (114 & 115)	<u>\$160,860</u>

*Alternatively, overapplied overhead can be listed among the overhead items.

Part 4**Gross profit on the income statement for the month ended September 30**

Sales	\$100,000
Cost of goods sold (\$55,400 - \$2,200).....	<u>(53,200)</u>
Gross profit	<u>\$ 46,800</u>

Presentation of inventories on the September 30 balance sheet

Inventories	
Raw materials	\$ 14,000*
Goods in process (Job 116).....	62,000
Finished goods (Job 115).....	<u>105,460</u>
Total inventories	<u>\$181,460</u>

* Beginning raw materials inventory	\$16,000
Purchases.....	60,000
Direct materials used.....	(56,000)
Indirect materials used.....	<u>(6,000)</u>
Ending raw materials inventory.....	<u>\$14,000</u>

Part 5

Overhead is overapplied by \$2,200, meaning that individual jobs or batches are over-costed. Thus, profits at the job (and batch) level are understated.

Problem 2-2B (75 minutes)**Part 1**

a.			
Dec. 31	Goods in Process Inventory	13,000	
	Raw Materials Inventory		13,000
	<i>To record direct materials costs for Jobs 603 and 604 (\$5,000 + \$8,000).</i>		
b.			
Dec. 31	Goods in Process Inventory	18,000	
	Factory Payroll		18,000
	<i>To record direct labor costs for Jobs 603 and 604 (\$6,000 + \$12,000).</i>		
c.			
Dec. 31	Goods in Process Inventory	14,400	
	Factory Overhead.....		14,400
	<i>To allocate overhead to Jobs 603 and 604 at 80% of direct labor cost assigned to them.</i>		
d.			
Dec. 31	Factory Overhead.....	1,500	
	Raw Materials Inventory		1,500
	<i>To add cost of indirect materials to actual factory overhead.</i>		
e.			
Dec. 31	Factory Overhead.....	2,000	
	Factory Payroll		2,000
	<i>To add cost of indirect labor to actual factory overhead.</i>		

Part 2**Revised Factory Overhead account**

Ending balance from trial balance	\$ 9,800	debit
Applied to Jobs 603 and 604	(14,400)	credit
Additional indirect materials	1,500	debit
Additional indirect labor	<u>2,000</u>	debit
Overapplied overhead	<u><u>\$(1,100)</u></u>	credit

Dec. 31	Factory Overhead.....	1,100	
	Cost of Goods Sold.....		1,100
	<i>To remove \$1,100 of overapplied overhead from the Factory Overhead account and subtract it from cost of goods sold.</i>		

Problem 2-2B (continued)
Part 3

METRO COMPANY		
Trial Balance		
December 31, 2011		
	<i>Debit</i>	<i>Credit</i>
Cash	\$ 40,000	
Accounts receivable	80,000	
Raw materials inventory*	9,500	
Goods in process inventory**	45,400	
Finished goods inventory	50,000	
Prepaid rent	4,000	
Accounts payable		\$ 16,000
Notes payable		30,000
Common stock		60,000
Retained earnings		33,800
Sales		250,000
Cost of goods sold (\$140,000 – 1,100)	138,900	
Factory payroll	0	
Factory overhead	0	
Operating expenses.....	<u>22,000</u>	
Totals	<u>\$389,800</u>	<u>\$389,800</u>

* Raw materials inventory

Balance per trial balance	\$24,000
Less: Amounts recorded for Jobs 603 and 604	(13,000)
Less: Indirect materials	<u>(1,500)</u>
Ending balance	<u>\$ 9,500</u>

** Goods in process inventory

	<u>Job 603</u>	<u>Job 604</u>	<u>Total</u>
Direct materials	\$ 5,000	\$ 8,000	\$13,000
Direct labor	6,000	12,000	18,000
Overhead	<u>4,800</u>	<u>9,600</u>	<u>14,400</u>
Total cost	<u>\$15,800</u>	<u>\$29,600</u>	<u>\$45,400</u>

Problem 2-2B (Continued)

Part 4

METRO COMPANY	
Income Statement	
For Year Ended December 31, 2011	
Sales	\$ 250,000
Cost of goods sold.....	<u>(138,900)</u>
Gross profit.....	111,100
Operating expenses.....	<u>(22,000)</u>
Net income	<u>\$ 89,100</u>

METRO COMPANY	
Balance Sheet	
December 31, 2011	
ASSETS	
Cash	\$ 40,000
Accounts receivable	80,000
Inventories	
Raw materials inventory.....	\$ 9,500
Goods in process inventory.....	45,400
Finished goods inventory	<u>50,000</u> 104,900
Prepaid rent	<u>4,000</u>
Total assets	<u>\$228,900</u>
LIABILITIES AND EQUITY	
Accounts payable	\$ 16,000
Notes payable.....	<u>30,000</u>
Total liabilities	46,000
Common stock	60,000
Retained earnings (\$33,800 + \$89,100)	<u>122,900</u>
Total stockholders' equity.....	<u>182,900</u>
Total liabilities and equity	<u>\$228,900</u>

Problem 2-2B (Concluded)**Part 5**

The \$1,500 error would cause the costs for Job 604 to be understated. Since Job 604 is in process at the end of the period, goods in process inventory and total assets would both be understated on the balance sheet. In correcting the error, the over- or underapplied overhead would change by \$1,500. That is, if overhead is overapplied by, say, \$1,100, then overhead applied would increase by \$1,500; yielding \$2,600 in overapplied overhead. Any under- or overapplied overhead is charged directly to cost of goods sold, so cost of goods sold would decrease and net income would increase by \$1,500.

Problem 2-3B (70 minutes)**Part 1****JOB COST SHEETS**

Job No. 487	
Materials	\$13,500
Labor	16,500
Overhead	<u>14,850</u>
Total cost	<u>\$44,850</u>

Job No. 490	
Materials	\$10,500
Labor	18,000
Overhead	<u>16,200</u>
Total cost	<u>\$44,700</u>

Job No. 488	
Materials	\$ 9,000
Labor	19,500
Overhead	<u>17,550</u>
Total cost	<u>\$46,050</u>

Job No. 491	
Materials	\$ 1,500
Labor	7,500
Overhead	<u>6,750</u>
Total cost	<u>\$15,750</u>

Job No. 489	
Materials	\$12,000
Labor	25,500
Overhead	<u>22,950</u>
Total cost	<u>\$60,450</u>

Part 2

a.	Raw Materials Inventory	57,000	
	Accounts Payable		57,000
	<i>To record materials purchases.</i>		
b.	Factory Payroll	99,750	
	Cash		99,750
	<i>To record factory payroll.</i>		
c.	Factory Overhead.....	11,250	
	Cash		11,250
	<i>To record other factory overhead.</i>		
d.	Goods in Process Inventory	46,500	
	Factory Overhead.....	3,750	
	Raw Materials Inventory		50,250
	<i>To record direct & indirect materials.</i>		

Problem 2-3B (Continued)

e.	[continued from prior page]		
	Goods in Process Inventory	87,000	
	Factory Overhead.....	12,750	
	Factory Payroll		99,750
	<i>To record direct & indirect labor.</i>		
f.	Goods in Process Inventory	54,000	
	Factory Overhead.....		54,000
	<i>To apply overhead to jobs</i> <i>[((\$16,500 + \$25,500 + \$18,000) x 90%).</i>		
g.	Finished Goods Inventory.....	150,000	
	Goods in Process Inventory		150,000
	<i>To record completion of jobs</i> <i>(\$44,850 + \$60,450 + \$44,700).</i>		

h.	Accounts Receivable.....	225,000	
	Sales.....		225,000
	<i>To record sales on account.</i>		
	 Cost of Goods Sold.....	 105,300	
	Finished Goods Inventory.....		105,300
	<i>To record cost of sales (\$44,850 + \$60,450).</i>		
i.	Factory Overhead.....	51,000	
	Accum. Depreciation—Factory Building		24,750
	Accum. Depreciation—Factory Equipment		18,750
	Prepaid Insurance		2,250
	Property Taxes Payable		5,250
	<i>To record other factory overhead.</i>		
j.	Goods in Process Inventory	24,300	
	Factory Overhead.....		24,300
	<i>To apply overhead to jobs</i> <i>[((\$19,500 + \$7,500) x 90%).</i>		

Problem 2-3B (Continued)

Part 3

GENERAL LEDGER ACCOUNTS			
Raw Materials Inventory		Factory Payroll	
(a) 57,000	(d) 50,250	(b) 99,750	(e) 99,750
Bal. 6,750		Bal. 0	
Goods in Process Inventory		Factory Overhead	
(d) 46,500	(g) 150,000	(c) 11,250	(f) 54,000
(e) 87,000		(d) 3,750	(j) 24,300
(f) 54,000		(e) 12,750	
(j) 24,300		(i) 51,000	
Bal. 61,800		Bal. 450	
Finished Goods Inventory		Cost of Goods Sold	
(g) 150,000	(h) 105,300	(h) 105,300	
Bal. 44,700		Bal. 105,300	

Part 4

Reports of Job Costs*	
Goods in Process Inventory	
Job 488	\$ 46,050
Job 491	<u>15,750</u>
Balance.....	<u>\$ 61,800</u>
 Finished Goods Inventory	
Job 490	<u>\$ 44,700</u>
Balance.....	<u>\$ 44,700</u>
 Cost of Goods Sold	
Job 487	\$ 44,850
Job 489	<u>60,450</u>
Balance.....	<u>\$105,300</u>

*Individual totals reconcile with account balances shown in part 3.

Problem 2-4B (35 minutes)

Part 1

a. Predetermined overhead rate

$$\frac{\text{Estimated overhead costs}}{\text{Estimated direct labor cost}} = \frac{\$2,400,000}{[40 \times 1,500 \times \$50]} = \frac{\$2,400,000}{\$3,000,000} = \underline{\underline{80\%}}$$

b. Overhead costs charged to jobs

Job No.	Direct Labor	Applied Overhead (80%)
625	\$ 300,000	\$ 240,000
626	225,000	180,000
627	975,000	780,000
628	240,000	192,000
629	375,000	300,000
630	75,000	60,000
Total	<u>\$2,190,000</u>	<u>\$1,752,000</u>

c. Overapplied or underapplied overhead determination

Actual overhead cost.....	\$2,200,000
Less applied overhead cost.....	<u>1,752,000</u>
Underapplied overhead.....	<u>\$ 448,000</u>

Part 2

Dec. 31	Cost of Goods Sold.....	448,000	
	Factory Overhead.....		448,000
	<i>To assign underapplied overhead.</i>		

Problem 2-5B (90 minutes)

JOB COST SHEET								
Customer's Name		<u>Olivas Company</u>			Job No.		<u>450</u>	
Direct Materials		Direct Labor		Overhead Costs Applied				
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount	
	#223	2,400	#1-10	24,000	June --	120%	28,800	
	#224	16,000						
				SUMMARY OF COSTS				
				Dir. Materials			18,400	
				Dir. Labor.....			24,000	
				Overhead.....			<u>28,800</u>	
				Total Cost of Job...			<u>71,200</u>	
Total		18,400	Total					<i>FINISHED</i>

JOB COST SHEET								
Customer's Name		<u>Ireland, Inc.</u>			Job No.		<u>451</u>	
Direct Materials		Direct Labor		Overhead Costs Applied				
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount	
	#225	1,200	#11-20	20,000	June--	120%	24,000	
	#226	12,000						
				SUMMARY OF COSTS				
				Dir. Materials				
				Dir. Labor.....				
				Overhead.....				
				Total Cost of Job ...			<u> </u>	
Total			Total					

Problem 2-5B (Continued)

MATERIALS LEDGER CARD											
Item		Material M									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									150	40	6,000
	#20	150	40	6,000					300	40	12,000
					#223	60	40	2,400	240	40	9,600
					#225	30	40	1,200	210	40	8,400

MATERIALS LEDGER CARD											
Item		Material R									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									50	160	8,000
	#21	200	160	32,000					250	160	40,000
					#224	100	160	16,000	150	160	24,000
					#226	75	160	12,000	75	160	12,000

MATERIALS LEDGER CARD											
Item		Paint									
Received					Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requisition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									20	20	400
					#227	10	20	200	10	20	200

Problem 2-5B (Continued)

GENERAL JOURNAL			
a.	Raw Materials Inventory	38,000	
	Accounts Payable		38,000
	<i>To record materials purchases (\$6,000 + \$32,000).</i>		
d.	Factory Payroll	48,000	
	Cash		48,000
	<i>To record factory payroll.</i>		
	Factory Overhead	47,000	
	Cash		47,000
	<i>To record other factory overhead.</i>		
e.	Finished Goods Inventory	71,200	
	Goods in Process		71,200
	<i>To record completion of job.</i>		
f.	Accounts Receivable	130,000	
	Sales		130,000
	<i>To record sales on account.</i>		
	Cost of Goods Sold	71,200	
	Finished Goods Inventory		71,200
	<i>To record cost of sales.</i>		
h.	Goods in Process Inventory*	31,600	
	Factory Overhead	200	
	Raw Materials Inventory		31,800
	<i>To record direct & indirect materials.</i>		
	<i>*(\$2,400 + \$1,200 + \$16,000 + \$12,000)</i>		
i.	Goods in Process Inventory*	44,000	
	Factory Overhead	4,000	
	Factory Payroll		48,000
	<i>To record direct & indirect labor.</i>		
	<i>*(\$24,000 + \$20,000)</i>		
j.	Goods in Process Inventory	52,800	
	Factory Overhead		52,800
	<i>To apply overhead (\$28,800 + \$24,000).</i>		

Problem 2-5B (Continued)

GENERAL LEDGER

<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; border-bottom: 1px solid black;">Cash</th> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: right;">(d) 48,000</td> </tr> <tr> <td></td> <td style="text-align: right;">(d) 47,000</td> </tr> <tr> <td></td> <td style="text-align: right; border-top: 1px solid black;">95,000</td> </tr> </table>	Cash			(d) 48,000		(d) 47,000		95,000	<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; border-bottom: 1px solid black;">Accounts Receivable</th> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: right;">(f) 130,000</td> </tr> </table>	Accounts Receivable			(f) 130,000						
Cash																			
	(d) 48,000																		
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	95,000																		
Accounts Receivable																			
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Sales																			
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Cost of Goods Sold																			
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Finished Goods Inventory																			
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Raw Materials Inventory																			
Bal. 14,400	(h) 31,800																		
(a) 38,000																			
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Factory Overhead																			
(d) 47,000	(j) 52,800																		
(h) 200																			
(i) 4,000																			
	1,600																		
Factory Payroll																			
(d) 48,000	(i) 48,000																		
	0																		

FACTORY OVERHEAD LEDGER

<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; border-bottom: 1px solid black;">Indirect Materials</th> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: right;">(b) 200</td> </tr> </table>	Indirect Materials			(b) 200	<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; border-bottom: 1px solid black;">Indirect Labor</th> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: right;">(c) 4,000</td> </tr> </table>	Indirect Labor			(c) 4,000
Indirect Materials									
	(b) 200								
Indirect Labor									
	(c) 4,000								
<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; border-bottom: 1px solid black;">Miscellaneous Overhead</th> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: right;">(d) 47,000</td> </tr> </table>	Miscellaneous Overhead			(d) 47,000					
Miscellaneous Overhead									
	(d) 47,000								

Problem 2-5B (Continued)**Computation notes**

1. Balance in Raw Materials Inventory	
Material M.....	\$ 8,400
Material R	12,000
Paint	200
Total raw materials	<u>\$20,600</u>
2. Balance in Goods in Process Inventory	
Materials.....	\$13,200
Labor	20,000
Overhead.....	24,000
Total goods in process.....	<u>\$57,200</u>
3. Factory Overhead	
Actual Factory Overhead	
Miscellaneous overhead	\$ 47,000
Indirect materials	200
Indirect labor	4,000
Total actual factory overhead	51,200
Factory overhead applied	52,800
Overapplied overhead	<u>\$(1,600)</u>

SERIAL PROBLEM

Serial Problem—SP 2, Business Solutions (40 minutes)

1. The cost of direct materials requisitioned in the month equals the total direct materials costs accumulated on the three jobs less the amount of direct materials cost assigned to Job 6.02 in May:

Job 6.02	\$1,500	
Less prior costs	<u>(600)</u>	\$ 900
Job 6.03		3,300
Job 6.04		<u>2,700</u>
Total materials used (requisitioned)		<u><u>\$6,900</u></u>

2. Direct labor cost incurred in the month equals the total direct labor costs accumulated on the three jobs less the amount of direct labor cost assigned to Job 6.02 in May:

Job 6.02	\$ 800	
Less prior costs	<u>(180)</u>	\$ 620
Job 6.03		1,420
Job 6.04		<u>2,100</u>
Total direct labor		<u><u>\$4,140</u></u>

3. The predetermined overhead rate equals the ratio between the amount of overhead assigned to the jobs divided by the amount of direct labor cost assigned to them. Since the rate is assumed constant during the year in this problem, and the same rate is used for all jobs within a month, the ratio for any one of them equals the rate that was applied. This table shows the ratio for jobs 6.02 and 6.04:

	Job 6.02	Job 6.04
Overhead	\$ 400	\$1,050
Direct labor	800	2,100
Predetermined overhead rate	50%	50%

4. The cost transferred to finished goods in June equals the total costs of the two completed jobs for the month, which are Jobs 6.02 and 6.03:

	Job 6.02	Job 6.03	Total
Direct materials	\$1,500	\$3,300	\$4,800
Direct labor	800	1,420	2,220
Overhead	<u>400</u>	<u>710</u>	<u>1,110</u>
Total transferred cost	<u><u>\$2,700</u></u>	<u><u>\$5,430</u></u>	<u><u>\$8,130</u></u>

Reporting in Action — BTN 2-1

- 1. We would anticipate that at least two types of costs will increase as a percent of sales with Research In Motion's growth in sales. The first type is broadly classed into variable costs. Variable costs are the usual operating costs including selling, and administrative costs. Simply stated, it will cost Research In Motion to expand and operate in more markets. The second type of costs relates to fixed costs that occur with growth beyond Research In Motion's current productive capacity. Specifically, increasing amounts of property and equipment assets are likely to be required with growth in sales. This is because Research In Motion would expand its ability to meet increasing sales through expanding its manufacturing capacity.**
- 2. Both types of costs identified in part 1 are likely to increase as Research In Motion expands its sales. Examples of specific items include communication, advertising, training, travel, and management costs. In addition, if growth is sufficiently large to push Research In Motion's sales beyond its current capacity, additional costs will be incurred in expanding property and equipment assets.**

Achieving success with the first type of costs can be examined by looking at the relation between operating costs and sales growth. Success with the second type of costs can be indirectly examined by looking at Research In Motion's gross margin ratio as sales increase. If Research In Motion does not expand its manufacturing capacity, this percent should increase as sales increase—this would be due to "economies of scale." Success could also be assessed using asset turnover ratios and return on asset ratios.

- 3. Solution depends on the annual report information obtained.**

Comparative Analysis — BTN 2-2

1. Actual inventory changes and operating cash flow effects as found on the cash flow statement or Note 16 for Research In Motion (amounts are in \$millions)

Research In Motion	Current Year	One Year Prior	Two Years Prior
Inventory change	Decrease	Increase	Increase
Operating cash flow effect from inventory change	Increase of \$60.8	Decrease of \$286.1	Decrease of \$140.4

Apple	Current Year	One Year Prior	Two Years Prior
Inventory change	Decrease	Increase	Increase
Operating cash flow effect from inventory change	Increase of \$54	Decrease of \$163	Decrease of \$76

2. A successful JIT system should reduce inventory levels. This reduction in inventory should increase operating cash flows. In the solution of part 1, notice that decreases in inventory yield increases in operating cash flow, while increases in inventory yield decreases in operating cash flow. The decreases in inventory from a JIT system should free up additional resources that could be directed toward paying off debt or expanding operations for even greater returns. This should increase operating income. In addition, losses from obsolete or damaged inventory should decline, also increasing operating income.
3. This is a one-time occurrence of a release of cash. However, this one-time adjustment can yield a recurring impact on returns if such freed up resources are directed into productive assets. Moreover, this adjustment should not reverse provided the JIT inventory system can maintain the reduced inventory levels.

Ethics Challenge — BTN 2-3

Instructor note: This problem is designed to illustrate why the accounting professional must be aware of management's and employees' biases when working with and relying on accounting estimates and data.

MEMORANDUM

TO:
FROM:
DATE:
SUBJECT:

Suggested content outline

The obvious concern is that management is allocating more overhead to government jobs compared to open market bid contracts. There is no obvious reason for such behavior other than a profit motive.

Specifically, by allocating more overhead to government jobs, profits on government jobs will increase in relation to cost. Conversely, private market jobs will show greater profits because more overhead is allocated to government jobs and less to private jobs.

This type of abuse in overhead allocation is a real problem in practice. This is why we still see "\$500 hammers" sold to the U.S. Government.

Communicating in Practice — BTN 2-4

Student notes should include but not be limited to the following points:

- 1. You recommend replacing the general accounting (periodic inventory) system with a cost accounting (perpetual inventory) system—specifically a job order cost accounting system. Cost accounting systems provide product cost information as products are manufactured whereas the current system does not. The new system would yield more timely information for pricing goods for sale. A job order system is particularly appropriate for the kinds of goods this business produces—goods made-to-order or stock items produced at varying points in time. A job order system is also appropriate for this type of discontinuous production of goods. Finally, the new system has the potential to reduce inventory levels—with possible implementation of a JIT system—that will free up funds to be devoted elsewhere.**
- 2. This new system would require use of many different documents to control the acquisition, use, and availability of materials. It also requires documents for allocation of labor and overhead costs, and for finished goods that are sold and unsold. The chapter illustrates many of these source documents for a cost accounting system. You might also suggest that these documents could/should be implemented in an “online” (paperless) manner to further facilitate information and inventory management.**
- 3. The focal point of the new system is the job cost sheet, which is used to accumulate and tally costs of goods as produced for each specific job order and job lot. You could prepare a sample and explain and illustrate how the system determines unit costs as production is completed.**

Taking It to the Net — BTN 2-5

Instructor note: There is no single solution to this assignment.

The Website [<http://www.amsi.com>] provides details about what its job costing software can provide to users. After careful examination, students can write a report to the CEO, which may include the following points:

- Features of the software (including the tools it offers)
- Reports that can be generated using the software
- Benefits of the software—pricing, cost control, inventory management, general ledger package, accounts payable and receivable, etc.

Teamwork in Action — BTN 2-6

1. A medical clinic can be considered as appropriate for a job order cost accounting system. This is because each patient is unique in many ways, such as the type/location of the illness (skin, heart, lung, etc.), health condition (some may have diabetes or high blood pressure whereas others may be free of such conditions), and other personal characteristics (age, gender, weight, etc.). Also, different patients have different emotional frames of mind that impact diagnosis and treatment.
2. In light of the differences identified in part 1, the doctors will consider the individual characteristics of every patient in determining the type and extent of treatment to be provided, the extent of counseling required, and so forth. Each individual patient will therefore “consume” resources in varying quantities resulting in different costs. This would suggest a job order cost accounting system as an appropriate monitoring and control system.

Entrepreneurial Decision — BTN 2-7

1. A job cost sheet for a service company like Liberty Tax Service would likely not have any costs for direct materials. A manufacturing company converts raw materials into finished goods, thus its job cost sheet would accumulate and track costs of raw materials for each job.
2. Examples of direct labor and overhead costs for Liberty Tax Service include:

Direct Labor: Wages/salaries of tax return preparers.

Overhead: Allocated portions of general administrative costs such as supervisors' salaries, depreciation on equipment used, and indirect materials such as paper.

Hitting the Road — BTN 2-8

1. The framework for the job cost sheet should follow that in the second exhibit in the chapter. This includes the descriptions for: company name, date, quantity, etc. In addition, the direct costs should include subcontract work, such as electrical and plumbing. The response for overhead will likely vary. The key is that any overhead allocation pattern be logical. In the building business, square footage, lot size, labor time, cost of materials, a straight average, or a combination may be utilized to allocate overhead.
2. Results of the comparison of job cost sheets to a builder's actual job cost sheets depend on the builder chosen and the format used.

Instructors often find it useful to have students/teams report findings to the class.

Global Decision — BTN 2-9

1. Actual inventory changes and operating net resources effects follow (parentheses indicate decreases)

Nokia (€ millions)	Current Year	One Year Prior
Inventory change in €	€(668)	€(343)
Operating cash flow effect from inventory change	Increase of €668	Increase of €343

2. The inventory changes and cash flow effects for Palm are shown below. We cannot definitively determine which company of the two would benefit the most from JIT implementation. The benefit of JIT would depend on the efficiencies gained from the implementation, which might vary by company. Also we cannot compare inventory changes in euros with those in dollars. We would have to translate euros to dollars to be able to determine which company has experienced the largest changes in inventory over the past few years.

Palm (\$ millions)	Current Year	One Year Prior	Two Years Prior
Inventory change	\$(47.7)	\$28.3	\$(18.8)
Operating cash flow effect from inventory change	Increase of \$47.7	Decrease of \$28.3	Increase of \$18.8