Managerial Accounting 7th edition Wild Solutions Manual

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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. Since managers need timely cost information, we need to estimate a predetermined overhead rate to use in applying estimated overhead to jobs. 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 Work 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 Work 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.

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7. **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. Factory overhead is also debited when overhead is overapplied at the end of the accounting period. Factory overhead is also credited when overhead is underapplied at the end of the accounting period.**

9. **Assuming that the overapplied or underapplied overhead is immaterial, it is closed to the Cost of Goods Sold account.**

10. **This production run should be accounted for as a job lot (batch). Although individual iPhones 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 estimated overhead 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. **Sprint employees can use job cost sheets to accumulate the costs (e.g. materials, labor, and overhead) used on each job. Managers can use this job cost information to monitor whether Sprint 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.**

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QUICK STUDIES

Quick Study 2-1 (5 minutes)

Manufactured as a job: 3, 4, 6

Manufactured as a job lot: 1, 2, 5

Quick Study 2-2 (10 minutes)

Finished Goods Inventory	10,500	
Work in Process Inventory		10,500
Transfer cost of completed job to Fin. Goods.		
Cost of Goods Sold	10,500	
Finished Goods Inventory		10,500
Transfer cost of delivered job to COGS.		
Cash	14,900	
Sales		14,900
Record sales price of delivered job.		

Quick Study 2-3 (10 minutes)

a. Job b. Process c. Process d. Job e. Job

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Quick Study 2-4 (15 minutes)

Raw Materials Inventory	**50,000**	
Cash		**50,000**
Record raw material purchases.		
Factory Overhead	**12,000**	
Raw Materials Inventory		**12,000**
Record indirect materials used in production.		
Work in Process Inventory	**32,000**	
Raw Materials Inventory		**32,000**
Record direct materials used in production.		

Quick Study 2-5 (10 minutes)

Work in Process Inventory	**140,000**	
Factory Wages Payable		**140,000**
Record direct labor.		
Factory Overhead	**40,000**	
Factory Wages Payable		**40,000**
Record indirect labor.		

Quick Study 2-6 (10 minutes)

1. **Factory overhead, $117,000 / Direct labor, $468,000 = 25%**
2. **Factory overhead, $117,000 / Direct materials, $390,000 = 30%**

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Quick Study 2-7 (10 minutes)

Rate = Estimated overhead costs = $560,000 = $400 per machine hour
Estimated machine hours 1,400

Amount applied to Job 65A = 13 x $400 = $5,200

Quick Study 2-8 (5 minutes)

Rate = Estimated overhead costs = $1,170,000 = 130%
Estimated direct materials $900,000

Quick Study 2-9 (10 minutes)

Overhead Applied	
Job 1 ($5,000 x 40%)	$2,000
Job 2 ($7,000 x 40%)	2,800
Job 3 ($1,500 x 40%)	600

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Quick Study 2-10 (10 minutes)

1.

JOB COST SHEET Job 1	
Direct materials	$ 5,000
Direct labor	9,000
Factory overhead (From QS 2-9)	2,000
Total	$16,000

JOB COST SHEET Job 2	
Direct materials	$ 7,000
Direct labor	4,000
Factory overhead (From QS 2-9)	2,800
Total	$13,800

JOB COST SHEET Job 3	
Direct materials	$1,500
Direct labor	3,000
Factory overhead (From QS 2-9)	600
Total	$5,100

2. The balance in the Work in the Process Inventory account equals $21,100, the sum of the total costs on the job cost sheets for the jobs that remain unfinished at the end of the period (Job 1 and Job 3).

3. The balance in the Finished Goods Inventory account equals $13,800, the total costs on the job cost sheet for the job (Job 2) that is finished (but not yet sold) at the end of the period.

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Quick Study 2-11 (15 minutes)

Cost of Goods Sold	**50,000**	
Factory Overhead*		**50,000**

Assign underapplied overhead.

Factory Overhead			
OH Incurred	950,000	OH Applied	900,000
Underapplied	50,000		

Quick Study 2-12 (5 minutes)

Factory Overhead	**22,000**	
Cost of Goods Sold*		**22,000**

Assign overapplied overhead.

Factory Overhead			
OH Incurred	624,000	OH Applied	646,000
		Overapplied	22,000

Quick Study 2-13 (10 minutes)

JOB COST SHEET	
Direct labor ($50 x 200)	**$10,000**
Factory overhead ($65 x 200)	**13,000**
Total cost	**$23,000**

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Quick Study 2-14 (10 minutes)

Services in Process Inventory*	3,250	
Service Wages Payable		3,250

Record direct labor.

*65 x $50

Services in Process Inventory**	2,600	
Factory Overhead		2,600

Record overhead.

**65 x $40

Quick Study 2-15 (5 minutes)

JOB COST SHEET	
Direct materials	$ 600
Direct labor	200
Factory overhead ($600 x 150%)	900
Total cost	$1,700

Cost per skateboard = $1,700/100 = $17

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EXERCISES

Exercise 2-1 (10 minutes)

1.	C	3.	A	5.	B
2.	D	4.	E		

Exercise 2-2 (15 minutes)

JOB COST SHEET: Job 9-1005		
Direct materials		
Q-4698	$1,250	
Q-4725	1,000	$2,250
Direct labor		
W-3393	600	
W-3479	450	
W-3559	300	1,350
Overhead ($1,350 X 110%)		1,485
Total cost		$5,085

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Exercise 2-3 (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	$15,000	
Less prior costs	(6,000)	$ 9,000
Job 103		33,000
Job 104		27,000
Total materials used (requisitioned)		$69,000

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	$8,000	
Less prior costs	(1,800)	$ 6,200
Job 103		14,200
Job 104		21,000
Total direct labor		$41,400

3. **The predetermined overhead rate equals the ratio of the amount of overhead assigned to 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 job equals the rate that was applied. This table shows the ratio for jobs 102 and 104:**

	Job 102	Job 104
Overhead	$ 4,000	$10,500
Direct labor	8,000	21,000
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	$15,000	$33,000	$48,000
Direct labor	8,000	14,200	22,200
Overhead	4,000	7,100	11,100
Total transferred cost	$27,000	$54,300	$81,300

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Exercise 2-4 (15 minutes)

1.	Raw Materials Inventory	76,200	
	Accounts Payable		76,200
	Record materials purchases.		
2.	Work in Process Inventory	48,000	
	Raw Materials Inventory		48,000
	Assign costs of direct materials used.		
3.	Work in Process Inventory	15,350	
	Factory Wages Payable		15,350
	Record direct labor used in production.		
4.	Work in Process Inventory	18,420	
	Factory Overhead		18,420
	Apply overhead to jobs.		

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Exercise 2-5 (20 minutes)

1.

a.	**Work in Process Inventory**	**9,500**	
	Raw Materials Inventory		**9,500**
	Record direct materials used.		
b.	**Work in Process Inventory**	**8,000**	
	Factory Wages Payable		**8,000**
	Record direct labor used.		
c.	**Work in Process Inventory**	**6,400**	
	Factory Overhead		**6,400**
	Apply overhead at 80% of direct labor cost.		
d.	**Cost of Goods Sold***	**16,000**	
	Finished Goods Inventory		**16,000**
	Record cost of sale of job 120.		
	***Total of direct materials, direct labor, and overhead applied to this job in June ($11,040) and July ($4,960).**		
e.	**Accounts Receivable**	**22,000**	
	Sales		**22,000**
	Record sale of job 120.		

2. The balance in Work in Process Inventory at the end of July ($6,280) equals the total cost reported on the job cost sheet for Job 122, the only job still in process at the end of the month. The balance in Finished Goods Inventory ($12,660) equals the total cost reported on the job cost sheet for Job 121, the only job finished but not sold by the end of the month.

	Job 121	Job 122
Direct materials	$ 6,000	$2,500
Direct labor	3,700	2,100
Overhead	2,960	1,680
Total cost	$12,660	$6,280

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Exercise 2-6 (25 minutes)

a.	Raw Materials Inventory	90,000	
	Accounts Payable		90,000
	Record materials purchases.		
b.	Work in Process Inventory	36,500	
	Raw Materials Inventory		36,500
	Assign costs of direct materials used.		
	Factory Overhead	19,200	
	Raw Materials Inventory		19,200
	Record indirect materials.		
c.	Work in Process Inventory	38,000	
	Factory Overhead	12,000	
	Cash		50,000
	Record payroll costs paid.		
d.	Factory Overhead	11,475	
	Cash		11,475
	Record other factory overhead paid.		
e.	Work in Process Inventory	47,500	
	Factory Overhead		47,500
	Apply overhead to jobs at the rate of 125% of direct labor cost.		
f.	Finished Goods Inventory	56,800	
	Work in Process Inventory		56,800
	Record jobs completed.		
g.	Cost of Goods Sold	56,800	
	Finished Goods Inventory		56,800
	Record cost of sale of job.		
	Accounts Receivable	82,000	
	Sales		82,000
	Record sale of job.		

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Exercise 2-7 (30 minutes)

1. Cost of direct materials used

Beginning raw materials inventory	$ 43,000
Plus purchases	210,000
Raw materials available	253,000
Less ending raw materials inventory	(52,000)
Total raw materials used	201,000
Less indirect materials used	(15,000)
Cost of direct materials used	$186,000

Raw Materials Inventory			
Beg. balance	43,000		
Purchases	210,000		
Available for use	253,000		
		Direct materials	186,000
		Indirect materials	15,000
Ending balance	52,000		

2. Cost of direct labor used

Total factory payroll	$345,000
Less indirect labor	(80,000)
Cost of direct labor used	$265,000

3. Cost of goods manufactured

Beginning work in process inventory	$ 10,200
Plus direct materials	186,000
Plus direct labor	265,000
Plus overhead applied (70% of direct labor cost)	185,500
Total cost of work in process	646,700
Less ending work in process inventory	(21,300)
Cost of goods manufactured	$625,400

Work in Process Inventory			
Beg. balance	10,200		
Direct materials	186,000		
Direct labor	265,000		
OH applied	185,500		
Available	646,700		
		COGM	625,400
Ending Inventory	21,300		

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Exercise 2-7 (*continued*)

4. Cost of goods sold

Beginning finished goods inventory	$ 63,000
Plus cost of goods manufactured	625,400
Less ending finished goods inventory	(35,600)
Cost of goods sold	$ 652,800

Finished Goods Inventory			
Beg. balance	63,000		
COGM	625,400		
Available for sale	688,400		
		Cost of goods sold	652,800
Ending balance	35,600		

5. Gross profit

Sales	$1,400,000
Cost of goods sold	(652,800)
Gross profit	$ 747,200

6. Actual overhead incurred

Indirect materials	$ 15,000
Indirect labor	80,000
Other overhead costs	120,000
Total actual overhead incurred	215,000
Overhead applied	185,500
Underapplied overhead	$ 29,500

Factory Overhead			
Indirect materials	15,000		
Indirect labor	80,000		
Other overhead	120,000		
Total actual OH	215,000		
		OH applied	185,500
Underapplied OH	29,500		

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Exercise 2-8 (10 minutes)

1.	Raw Materials Inventory	210,000	
	Cash		210,000
	Record materials purchases.		
2.	Work in Process Inventory	186,000	
	Raw Materials Inventory		186,000
	Assign direct materials to jobs.		
3.	Factory Overhead	15,000	
	Raw Materials Inventory		15,000
	Record indirect materials used.		

Exercise 2-9 (10 minutes)

1.	Work in Process Inventory	265,000	
	Factory Wages Payable		265,000
	Record direct labor used.		
2.	Factory Overhead	80,000	
	Factory Wages Payable		80,000
	Record indirect labor used.		
3.	Factory Wages Payable	345,000	
	Cash		345,000
	Record payment of payroll.		

Exercise 2-10 (10 minutes)

1.	Factory Overhead	120,000	
	Other Accounts		120,000
	Record other factory overhead.		
2.	Work in Process Inventory	185,500	
	Factory Overhead		185,500
	Apply overhead to jobs.		
	Computed as: 70% Predetermined overhead rate x direct labor of $265,000		

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Exercise 2-11 (15 minutes)

1. $$\text{Rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated direct labor}} = \frac{\$747,500}{\$575,000} = 130\%$$

2.

Direct materials	$15,350
Direct labor	3,200
Factory overhead ($3,200 x 130%)	4,160
Total cost of Job No. 13-56	$22,710

Exercise 2-12 (20 minutes)

1. $$\text{Rate} = \frac{\text{Overhead costs}}{\text{Direct material costs}} = \frac{\$600,000}{\$1,500,000} = 40\%$$

2.

Total cost of job in process (given)	$ 50,000
Less materials cost of job in process (given)	(30,000)
Less overhead applied (30,000 x 40%)	(12,000)
Direct labor cost	$ 8,000

Exercise 2-13 (10 minutes)

Factory Overhead			
Actual OH	215,000	OH applied	185,500
Underapplied	29,500		

Cost of Goods Sold	29,500	
Factory Overhead		29,500

Allocate (close) underapplied overhead to cost of goods sold. *Applied overhead equals $265,000 x 70% = $185,500. Actual overhead = $215,000, computed as $15,000 + $80,000 + $120,000.*

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Exercise 2-14 (15 minutes)

Factory Overhead - Storm			
Indirect materials	22,000		
Indirect labor	46,000		
Other overhead	17,000		
Total actual OH	85,000		
		OH applied	88,200
		Overapplied OH	3,200

Factory Overhead	**3,200**	
Cost of Goods Sold		**3,200**

Close overapplied overhead for Storm.

Factory Overhead - Valle			
Indirect materials	12,500		
Indirect labor	46,500		
Other overhead	47,000		
Total actual OH	106,000		
		OH applied	105,200
Underapplied OH	800		

Cost of Goods Sold	**800**	
Factory Overhead		**800**

Close underapplied overhead for Valle.

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Exercise 2-15 (35 minutes)

1. Predetermined overhead rate

Estimated overhead costs	$750,000
Estimated direct material costs	$625,000
Rate (Overhead/Direct material)	120%

2. & 3.

Factory Overhead			
Incurred	830,000	Applied*	822,000
Underapplied	8,000		

*Overhead applied to jobs = 120% x $685,000 = $822,000

4.

Dec. 31	Cost of Goods Sold	8,000	
	Factory Overhead		8,000
	Close underapplied overhead.		

Exercise 2-16 (25 minutes)

1. Predetermined overhead rate

Estimated overhead costs	$1,680,000
Estimated direct labor costs	$ 480,000
Rate ($1,680,000/$480,000)	350%

2. & 3.

Overhead			
Incurred	1,652,000	Applied*	1,662,500
		Overapplied	10,500

*Overhead applied to jobs = 350% x $475,000 = $1,662,500

4.

Dec. 31	Factory Overhead	10,500	
	Cost of Goods Sold		10,500
	Close overapplied overhead.		

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Exercise 2-17 (30 minutes)

1. Overhead rate = Total overhead costs / Total direct labor costs

= $1,800,000 / $3,000,000 = 60%

2.

Total cost of work in process inventory	$ 71,000
Deduct: Direct labor	(20,000)
Deduct: Factory overhead ($20,000 x 60%)	(12,000)
Direct materials	$ 39,000

Exercise 2-18 (35 minutes)

1. Estimated cost of the architectural job

Labor type	Estimated hours	Hourly rate	Total cost
Architects	150	$300	$ 45,000
Staff	300	75	22,500
Clerical	500	20	10,000
Total labor cost			77,500
Overhead applied 175% of direct labor cost			135,625
Total estimated cost			$213,125

2. At a price of $285,000, Frey's profit would be only $71,875 (computed as $285,000 - $213,125). Frey would not earn its target profit of $80,000.

3. Frey's price to cover both its costs and desired profit is:

Total estimated cost	$213,125
Desired profit	80,000
Estimated selling price	$293,125

This $293,125 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 $285,000, the profit on the job will only be $71,875 ($285,000 – $213,125). While this may allow Frey to get the job, it must consider several other factors.

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Exercise 2-19 (15 minutes)

(1)	Services in Process Inventory*	9,900	
	Service Salaries Payable		9,900
	Record direct labor.		
	*(5 x $500) + (12 x $200) + (100 x $50)		
	Services in Process Inventory**	4,950	
	Services Overhead		4,950
	Apply overhead.		
	**$9,900 x 50%		
(2)		14,850	
	Cost of Services Provided		
	Services in Process Inventory		14,850
	Record cost of services.		

Exercise 2-20 (10 minutes)

Raw Materials Inventory	3,108	
Accounts Payable.....		3,108
Record raw material purchases (in € millions).		
Work in Process Inventory*	3,106	
Raw Materials Inventory		3,106
Record raw materials used in production (in € millions).		

* 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.

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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	$ 29,000	$ 35,000		
Direct labor	20,000	18,000		
Applied overhead*	10,000	9,000		
Beginning work in process	59,000	62,000		$ 121,000
For April				
Direct materials	135,000	220,000	$100,000	455,000
Direct labor	85,000	150,000	105,000	340,000
Applied overhead*	42,500	75,000	52,500	170,000
Total costs added in April	262,500	445,000	257,500	965,000
Total costs	$321,500	$507,000	$257,500	$1,086,000

*Equals 50% of direct labor cost.

Part 2 Journal entries for April

a.	Raw Materials Inventory	500,000	
	Accounts Payable		500,000
	Record materials purchases.		
b.	Work in Process Inventory	455,000	
	Raw Materials Inventory		455,000
	Assign direct materials to jobs.		
c.	Work in Process Inventory	340,000	
	Cash		340,000
	Record direct labor.		
d.	Factory Overhead	23,000	
	Cash		23,000
	Record indirect labor.		
e.	Work in Process Inventory	170,000	
	Factory Overhead		170,000
	Apply overhead to jobs.		

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Problem 2-1A (*continued*)

f. **[continued from prior page]**

	Factory Overhead	50,000	
	Raw Materials Inventory		50,000
	Record indirect materials.		
	Factory Overhead	19,000	
	Cash		19,000
	Record factory utilities.		
	Factory Overhead	51,000	
	Accumulated Depreciation—Factory Equip ..		51,000
	Record other factory overhead.		
	Factory Overhead	32,000	
	Cash		32,000
	Record factory rent.		
g.	Finished Goods Inventory (306 & 307)	828,500	
	Work in Process Inventory		828,500
	Record jobs completed ($321,500 + $507,000).		
h.	Cost of Goods Sold (306)	321,500	
	Finished Goods Inventory		321,500
	Record cost of sale of job.		
i.	Cash	635,000	
	Sales		635,000
	Record sale of job.		
j.	Cost of Goods Sold	5,000	
	Factory Overhead*		5,000
	Assign underapplied overhead.		

*Overhead applied to jobs		$170,000
Overhead incurred		
Indirect materials.....	$50,000	
Indirect labor	23,000	
Factory rent	32,000	
Factory utilities.....	19,000	
Factory equip. depreciation. .	51,000	175,000
Underapplied overhead		$ 5,000

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Problem 2-1A *(Continued)*

Part 3

MARCELINO COMPANY Schedule of Cost of Goods Manufactured For Month Ended April 30	
Direct materials used	$ 455,000
Direct labor used	340,000
Factory overhead applied	170,000
Total manufacturing costs	965,000
Add work in process March 31 (Jobs 306 & 307)	121,000
Total cost of work in process	1,086,000
Deduct work in process, April 30 (Job 308)	(257,500)
Cost of goods manufactured	$ 828,500

Part 4

Gross profit on the income statement for the month ended April 30

Sales	$ 635,000
Cost of goods sold ($321,500 + $5,000)	(326,500)
Gross profit	$ 308,500

Presentation of inventories on the April 30 balance sheet

Inventories	
Raw materials	$ 75,000*
Work in process (Job 308)	257,500
Finished goods (Job 307)	507,000
Total inventories	$ 839,500

* Beginning raw materials inventory	$ 80,000
Purchases	500,000
Direct materials used	(455,000)
Indirect materials used	(50,000)
Ending raw materials inventory	$ 75,000

Part 5

No, this adjustment is not posted to individual job cost sheets. Overhead is underapplied by $5,000, meaning that individual jobs or batches of jobs are under-costed. Thus, profits at the job (and batch) level are overstated.

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Problem 2-2A (75 minutes)

Part 1

a.

Dec. 31	Work in Process Inventory	28,800	
	Raw Materials Inventory		28,800
	Record direct materials costs for Jobs 402 and 404 ($10,200 + 18,600).		

b.

Dec. 31	Work in Process Inventory	59,800	
	Factory Wages Payable		59,800
	Record direct labor costs for Jobs 402 and 404 ($36,000 + $23,800).		

c.

Dec. 31	Work in Process Inventory	119,600	
	Factory Overhead		119,600
	Allocate overhead to Jobs 402 and 404 at 200% of direct labor cost assigned.		

d.

Dec. 31	Factory Overhead	5,600	
	Raw Materials Inventory		5,600
	Add cost of indirect materials to actual factory overhead.		

e.

Dec. 31	Factory Overhead	8,200	
	Factory Wages Payable		8,200
	Accrue indirect labor and assign it to actual factory overhead.		

Part 2

Revised Factory Overhead account

Ending balance from trial balance	$115,000	debit
Applied to Jobs 402 and 404	(119,600)	credit
Additional indirect materials	5,600	debit
Additional indirect labor	8,200	debit
Underapplied overhead	$ 9,200	debit

Dec. 31	Cost of Goods Sold	9,200	
	Factory Overhead		9,200
	Close underapplied overhead.		

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Problem 2-2A (*continued*)

Part 3

BERGAMO BAY COMPANY Trial Balance December 31, 2019	Debit	Credit
Cash	$170,000	
Accounts receivable	75,000	
Raw materials inventory*	45,600	
Work in process inventory**	208,200	
Finished goods inventory	15,000	
Prepaid rent	3,000	
Accounts payable		$ 17,000
Factory wages payable		68,000
Notes payable		25,000
Common stock		50,000
Retained earnings		271,000
Sales		373,000
Cost of goods sold ($218,000 + $9,200)	227,200	
Factory overhead	0	
Operating expenses	60,000	
Totals	$804,000	$804,000

* Raw materials inventory

Balance per trial balance	$80,000
Less: Amounts recorded for Jobs 402 and 404	(28,800)
Less: Indirect materials	(5,600)
Ending balance	$45,600

** Work in process inventory

	Job 402	Job 404	Total
Direct materials	$ 10,200	$18,600	$ 28,800
Direct labor	36,000	23,800	59,800
Overhead	72,000	47,600	119,600
Total cost	$118,200	$90,000	$208,200

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Problem 2-2A (*continued*)

Part 4

BERGAMO BAY COMPANY Income Statement For Year Ended December 31, 2019	
Sales	$373,000
Cost of goods sold	(227,200)
Gross profit	145,800
Operating expenses	(60,000)
Net income	$ 85,800

BERGAMO BAY COMPANY Balance Sheet December 31, 2019		
Assets		
Cash		$170,000
Accounts receivable		75,000
Inventories		
Raw materials inventory	$ 45,600	
Work in process inventory	208,200	
Finished goods inventory	15,000	268,800
Prepaid rent		3,000
Total assets		$516,800
Liabilities and equity		
Accounts payable		$ 17,000
Factory wages payable		68,000
Notes payable		25,000
Total liabilities		110,000
Common stock		50,000
Retained earnings ($271,000 + $85,800)		356,800
Total stockholders' equity		406,800
Total liabilities and equity		$516,800

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Problem 2-2A (*concluded*)

Part 5

This $5,600 error would cause the costs for Job 404 to be understated. Since Job 404 is in process at the end of the period, work in process inventory and total assets would both be understated on the balance sheet. In addition, the over- or underapplied overhead would change by $5,600.

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Problem 2-3A (70 minutes)

Part 1

JOB COST SHEETS

Job No. 136	
Materials.....	$ 48,000
Labor	12,000
Overhead.....	24,000
Total cost	$ 84,000

Job No. 138	
Materials.....	$ 19,200
Labor	37,500
Overhead.....	75,000
Total cost	$131,700

Job No. 137	
Materials.....	$ 32,000
Labor	10,500
Overhead.....	21,000
Total cost	$ 63,500

Job No. 139	
Materials.....	$ 22,400
Labor	39,000
Overhead.....	78,000
Total cost	$139,400

Job No. 140	
Materials.....	$ 6,400
Labor	3,000
Overhead.....	6,000
Total cost	$ 15,400

Part 2

a.	Raw Materials Inventory	200,000	
	Accounts Payable		200,000
	Record materials purchases.		
b.	Work in Process Inventory	128,000	
	Factory Overhead	19,500	
	Raw Materials Inventory		147,500
	Record direct & indirect materials.		
c.	Factory Overhead	15,000	
	Cash		15,000
	Record other factory overhead.		

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Problem 2-3A *(Continued)*

[continued from prior page]

d.	**Work in Process Inventory**	**102,000**	
	Factory Overhead	**24,000**	
	Cash		**126,000**
	Record direct & indirect labor.		
e.	**Work in Process Inventory**	**177,000**	
	Factory Overhead		**177,000**
	Apply overhead to jobs [($12,000 + $37,500 + $39,000) x 200%].		
f.	**Finished Goods Inventory**	**355,100**	
	Work in Process Inventory		**355,100**
	Record completion of jobs ($84,000 + $131,700 + $139,400).		
g.	**Accounts Receivable**	**525,000**	
	Sales		**525,000**
	Record sales on account.		
	Cost of Goods Sold	**215,700**	
	Finished Goods Inventory		**215,700**
	Record cost of sales ($84,000 + $131,700).		
h.	**Factory Overhead**	**149,500**	
	Accum. Depreciation—Factory Building		**68,000**
	Accum. Depreciation—Factory Equipment		**36,500**
	Prepaid Insurance		**10,000**
	Property Taxes Payable		**35,000**
	Record other factory overhead.		
i.	**Work in Process Inventory**	**27,000**	
	Factory Overhead		**27,000**
	Apply overhead to jobs [($10,500 + $3,000) x 200%].		

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Problem 2-3A *(Continued)*

Part 3

GENERAL LEDGER ACCOUNTS

Raw Materials Inventory

(a)	200,000	(b)	147,500
Bal.	52,500		

Work in Process Inventory

(b)	128,000	(f)	355,100
(d)	102,000		
(e)	177,000		
(i)	27,000		
Bal.	78,900		

Factory Overhead

(b)	19,500	(e)	177,000
(c)	15,000	(i)	27,000
(d)	24,000		
(h)	149,500		
Bal.	4,000		

Finished Goods Inventory

(f)	355,100	(g)	215,700
Bal.	139,400		

Cost of Goods Sold

(g)	215,700		
Bal.	215,700		

Part 4

Reports of Job Costs*

Work in Process Inventory

Job 137	$ 63,500
Job 140	15,400
Balance	$ 78,900

Finished Goods Inventory

Job 139	$139,400
Balance	$139,400

Cost of Goods Sold

Job 136	$ 84,000
Job 138	131,700
Balance	$215,700

***Individual totals reconcile with general ledger account balances in part 3.**

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Problem 2-4A (35 minutes)

Part 1

a. Predetermined overhead rate

$$\frac{\text{Estimated overhead costs}}{\text{Estimated direct labor cost}} = \frac{\$1,500,000}{[50 \times 2,000 \times \$25]} = \frac{\$1,500,000}{\$2,500,000} = 60\%$$

b. Overhead costs charged to jobs

Job No.	Direct Labor	Applied Overhead (60%)
201	$ 604,000	$ 362,400
202	563,000	337,800
203	298,000	178,800
204	716,000	429,600
205	314,000	188,400
206	17,000	10,200
Total	$2,512,000	$1,507,200

c. Overapplied or underapplied overhead determination

Actual overhead cost	$1,520,000
Less applied overhead cost	1,507,200
Underapplied overhead	$ 12,800

Part 2

Dec. 31	Cost of Goods Sold	12,800	
	Factory Overhead		12,800
	Assign underapplied overhead.		

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Problem 2-5A (80 minutes)

JOB COST SHEET

Customer's Name Worldwide Company **Job No.** 102

	Direct Materials		Direct Labor		Overhead Costs Applied		
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#35	33,750	#1-10	90,000	May ---	80%	72,000
	#36	12,960					
	Total	46,710	Total	90,000			

SUMMARY OF COSTS

Dir. Materials	46,710
Dir. Labor	90,000
Overhead	72,000
Total cost of Job	208,710

FINISHED

JOB COST SHEET

Customer's Name Reuben Company **Job No.** 103

	Direct Materials		Direct Labor		Overhead Costs Applied		
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#37	17,500	#11-30	65,000	May ---	80%	52,000
	#38	6,840					
	Total		Total				

SUMMARY OF COSTS

Dir. Materials	
Dir. Labor	
Overhead	
Total cost of Job	

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Problem 2-5A *(Continued)*

MATERIALS LEDGER CARD

Item: Material M

	Received				Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									200	250	50,000
	#426	250	250	62,500					450	250	112,500
					#35	135	250	33,750	315	250	78,750
					#37	70	250	17,500	245	250	61,250

MATERIALS LEDGER CARD

Item: Material R

	Received				Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									95	180	17,100
	#427	90	180	16,200					185	180	33,300
					#36	72	180	12,960	113	180	20,340
					#38	38	180	6,840	75	180	13,500

MATERIALS LEDGER CARD

Item: Paint

	Received				Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
May 1									55	75	4,125
					#39	15	75	1,125	40	75	3,000

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Problem 2-5A *(Continued)*

GENERAL JOURNAL			
a.	Raw Materials Inventory	78,700	
	Accounts Payable		78,700
	Record materials purchases ($62,500+$16,200).		
d.	Work in Process Inventory*	155,000	
	Factory Overhead	19,250	
	Cash		174,250
	Record direct & indirect labor.		
	**($90,000 + 65,000)*		
	Factory Overhead	102,000	
	Cash		102,000
	Record other factory overhead.		
e.	Finished Goods Inventory	208,710	
	Work in Process		208,710
	Record completion of jobs.		
f.	Accounts Receivable	400,000	
	Sales		400,000
	Record sales on account.		
	Cost of Goods Sold	208,710	
	Finished Goods Inventory		208,710
	Record cost of sales.		
h.	Work in Process Inventory*	71,050	
	Factory Overhead	1,125	
	Raw Materials Inventory		72,175
	Record direct & indirect materials.		
	**($33,750 + $12,960 + $17,500 + $6,840)*		
i.	Work in Process Inventory	124,000	
	Factory Overhead		124,000
	Apply overhead ($72,000 + 52,000).		

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Problem 2-5A *(Continued)*

j. The ending balance in the Factory Overhead account is computed as:

Actual Factory Overhead	
Miscellaneous overhead	**$102,000**
Indirect materials	**1,125**
Indirect labor	**19,250**
Total actual factory overhead	**122,375**
Factory overhead applied	**124,000**
Overapplied overhead	**$ (1,625)**

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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	$ 14,000	$ 18,000		
Direct labor	18,000	16,000		
Applied overhead*	9,000	8,000		
Beginning work In process	41,000	42,000		$ 83,000
For September				
Direct materials	100,000	170,000	$ 80,000	350,000
Direct labor	30,000	68,000	120,000	218,000
Applied overhead*	15,000	34,000	60,000	109,000
Total costs added in September	145,000	272,000	260,000	677,000
Total costs	$186,000	$314,000	$260,000	$760,000

*Equals 50% of direct labor cost.

Part 2 Journal entries for September

a.	Raw Materials Inventory	400,000	
	Accounts Payable		400,000
	Record materials purchases.		
b.	Work in Process Inventory	350,000	
	Raw Materials Inventory		350,000
	Assign direct materials to jobs.		
c.	Work in Process Inventory	218,000	
	Cash		218,000
	Record and pay direct labor.		
d.	Factory Overhead	14,000	
	Cash		14,000
	Record and pay indirect labor.		
e.	Work in Process Inventory	109,000	
	Factory Overhead		109,000
	Apply overhead to jobs.		

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Problem 2-1B *(Continued)*

f. **[continued from prior page]**

	Factory Overhead	20,000	
	Cash		20,000
	Record other factory overhead (rent).		
	Factory Overhead	12,000	
	Cash		12,000
	Record other factory overhead (utilities).		
	Factory Overhead	30,000	
	Accum. Depreciation—Factory Equip		30,000
	Record other factory overhead (depreciation).		
	Factory Overhead	30,000	
	Raw Materials Inventory		30,000
	Record indirect materials.		
g.	Finished Goods Inventory	500,000	
	Work in Process Inventory		500,000
	Record jobs completed ($186,000 + $314,000).		
h.	Cost of Goods Sold	186,000	
	Finished Goods Inventory		186,000
	Record cost of sale of job.		
i.	Cash	380,000	
	Sales		380,000
	Record sale of job.		
j.	Factory Overhead*	3,000	
	Cost of Goods Sold		3,000
	Assign overapplied overhead.		

*Overhead applied to jobs		$109,000
Overhead incurred		
Indirect materials	$30,000	
Indirect labor	14,000	
Factory rent	20,000	
Factory utilities	12,000	
Factory equip. depreciation	30,000	106,000
Overapplied overhead		$ 3,000

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Problem 2-1B *(Continued)*

Part 3

PEREZ MFG. Schedule of Cost of Goods Manufactured For Month Ended September 30	
Direct materials used	$350,000
Direct labor used	218,000
Factory overhead applied	109,000
Total manufacturing costs	677,000
Add work in process August 31 (Jobs 114 & 115)	83,000
Total cost of work in process	760,000
Deduct work in process, September 30 (Job 116)	(260,000)
Cost of goods manufactured	$500,000

Part 4

Gross profit on the income statement for the month ended September 30

Sales	$380,000
Cost of goods sold ($186,000 - $3,000)	(183,000)
Gross profit	$197,000

Presentation of inventories on the September 30 balance sheet

Inventories	
Raw materials	$170,000*
Work in process (Job 116)	260,000
Finished goods (Job 115)	314,000
Total inventories	$744,000

* Beginning raw materials inventory	$150,000
Purchases	400,000
Direct materials used	(350,000)
Indirect materials used	(30,000)
Ending raw materials inventory	$170,000

Part 5

Overhead is overapplied by $3,000, meaning that individual jobs or batches are over-costed. Thus, profits at the job (and batch) level are understated.

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Problem 2-2B (75 minutes)

Part 1

a.

Dec. 31	Work in Process Inventory	12,200	
	Raw Materials Inventory		12,200
	Record direct materials costs for Jobs 603 and 604 ($4,600 + $7,600).		

b.

Dec. 31	Work in Process Inventory	13,000	
	Factory Wages Payable		13,000
	Record direct labor costs for Jobs 603 and 604 ($5,000 + $8,000).		

c.

Dec. 31	Work in Process Inventory	26,000	
	Factory Overhead		26,000
	Allocate overhead to Jobs 603 and 604 at 200% of direct labor cost assigned to them.		

d.

Dec. 31	Factory Overhead	2,100	
	Raw Materials Inventory		2,100
	Record cost of indirect materials.		

e.

Dec. 31	Factory Overhead	3,000	
	Factory Wages Payable		3,000
	Accrue cost of indirect labor.		

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Problem 2-2B (*Continued*)

Part 2

Revised Factory Overhead account		
Ending balance from trial balance	$27,000	Debit
Applied to Jobs 603 and 604	(26,000)	Credit
Additional indirect materials	2,100	Debit
Additional indirect labor	3,000	Debit
Underapplied overhead	$ 6,100	Debit

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

Part 3

CAVALLO MFG.
Trial Balance
December 31, 2019

	Debit	Credit
Cash	$ 64,000	
Accounts receivable	42,000	
Raw materials inventory*	11,700	
Work in process inventory**	51,200	
Finished goods inventory	9,000	
Prepaid rent	3,000	
Accounts payable		$ 10,500
Factory wages payable		16,000
Notes payable		13,500
Common stock		30,000
Retained earnings		87,000
Sales		180,000
Cost of goods sold***	111,100	
Factory overhead	0	
Operating expenses	45,000	
Totals	$337,000	$337,000

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Problem 2-2B *(Continued)*

Part 3 (*Concluded)*

* Raw materials inventory

Balance per trial balance	$26,000
Less: Amounts recorded for Jobs 603 and 604	(12,200)
Less: Indirect materials	(2,100)
Ending balance	$11,700

** Work in process inventory

	Job 603	Job 604	Total
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	$19,600	$31,600	$51,200

*** $105,000 + $6,100 = $111,100

Part 4

CAVALLO MFG.
Income Statement
For Year Ended December 31, 2019

Sales	$ 180,000
Cost of goods sold	(111,100)
Gross profit	68,900
Operating expenses	(45,000)
Net income	$ 23,900

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Problem 2-2B *(Concluded)*

Part 4 (Concluded)

CAVALLO MFG. Balance Sheet December 31, 2019		
Assets		
Cash		$ 64,000
Accounts receivable		42,000
Inventories		
Raw materials inventory	$11,700	
Work in process inventory	51,200	
Finished goods inventory	9,000	71,900
Prepaid rent		3,000
Total assets		$180,900
Liabilities and equity		
Accounts payable		$ 10,500
Factory wages payable		16,000
Notes payable		13,500
Total liabilities		40,000
Common stock		30,000
Retained earnings ($87,000 + $23,900)		110,900
Total stockholders' equity		140,900
Total liabilities and equity		$180,900

Part 5

The $2,100 error would cause the costs for Job 604 to be understated. Since Job 604 is in process at the end of the period, work in process inventory and total assets would both be understated on the balance sheet. In addition the over- or underapplied overhead would change by $2,100. That is, if overhead is underapplied by, say, $6,100, that amount would decrease by $2,100, yielding $4,000 in underapplied overhead. Any under- or overapplied overhead is charged directly to cost of goods sold, so correcting the error would cause cost of goods sold to decrease and net income to increase by $2,100—yielding a $2,100 increase in retained earnings.

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Problem 2-3B (70 minutes)

Part 1

JOB COST SHEETS

Job No. 487	
Materials.....	$30,000
Labor	8,000
Overhead.....	16,000
Total cost	$54,000

Job No. 488	
Materials.....	$20,000
Labor	7,000
Overhead.....	14,000
Total cost	$41,000

Job No. 489	
Materials.....	$12,000
Labor	25,000
Overhead.....	50,000
Total cost	$87,000

Job No. 490	
Materials.....	$14,000
Labor	26,000
Overhead.....	52,000
Total cost	$92,000

Job No. 491	
Materials.....	$ 4,000
Labor	2,000
Overhead.....	4,000
Total cost	$10,000

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Problem 2-3B (*Concluded*)

Part 2

a.	**Raw Materials Inventory**	**125,000**	
	Accounts Payable		**125,000**
	Record materials purchases.		
b.	**Work in Process Inventory**	**80,000**	
	Factory Overhead	**12,000**	
	Raw Materials Inventory		**92,000**
	Record direct & indirect materials.		
c.	**Factory Overhead**	**11,000**	
	Cash		**11,000**
	Record other factory overhead.		
d.	**Work in Process Inventory**	**68,000**	
	Factory Overhead	**16,000**	
	Cash		**84,000**
	Record direct & indirect labor.		
e.	**Work in Process Inventory**	**118,000**	
	Factory Overhead		**118,000**
	Apply overhead to jobs [($8,000 + $25,000 + $26,000) x 200%].		
f.	**Finished Goods Inventory**	**233,000**	
	Work in Process Inventory		**233,000**
	Record completion of jobs ($54,000 + $87,000 + $92,000).		

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Problem 2-3B *(Continued)*

[continued from prior page]

g.	**Accounts Receivable**	**340,000**	
	Sales		**340,000**
	Record sales on account.		
	Cost of Goods Sold	**141,000**	
	Finished Goods Inventory		**141,000**
	Record cost of sales ($54,000 + $87,000).		
h.	**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**
	Record other factory overhead.		
i.	**Work in Process Inventory**	**18,000**	
	Factory Overhead		**18,000**
	Apply overhead to jobs [($7,000 + $2,000) x 200%].		

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Problem 2-3B *(Continued)*

Part 3

GENERAL LEDGER ACCOUNTS

Raw Materials Inventory

(a)	125,000	(b)	92,000
Bal.	33,000		

Work in Process Inventory

(b)	80,000	(f)	233,000
(d)	68,000		
(e)	118,000		
(i)	18,000		
Bal.	51,000		

Factory Overhead

(b)	12,000	(e)	118,000
(c)	11,000	(i)	18,000
(d)	16,000		
(h)	96,000		
		Bal.	1,000

Finished Goods Inventory

(f)	233,000	(g)	141,000
Bal.	92,000		

Cost of Goods Sold

(g)	141,000		
Bal.	141,000		

Part 4

Reports of Job Costs*

Work in Process Inventory

Job 488	$ 41,000
Job 491	10,000
Balance	$ 51,000

Finished Goods Inventory

Job 490	$ 92,000
Balance	$ 92,000

Cost of Goods Sold

Job 487	$ 54,000
Job 489	87,000
Balance	$141,000

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

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Problem 2-4B (35 minutes)

Part 1

a. Predetermined overhead rate

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

b. Overhead costs charged to jobs

Job No.	Direct Labor	Applied Overhead (50%)
625	$ 354,000	$177,000
626	330,000	165,000
627	175,000	87,500
628	420,000	210,000
629	184,000	92,000
630	10,000	5,000
Total	$1,473,000	$736,500

c. Overapplied or underapplied overhead determination

Actual overhead cost	$725,000
Less applied overhead cost	736,500
Overapplied overhead	$ (11,500)

Part 2

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

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Problem 2-5B (90 minutes)

JOB COST SHEET

Customer's Name Encinita Company **Job No.** 450

	Direct Materials		Direct Labor		Overhead Costs Applied		
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#223	16,000	#1-10	40,000	June --	70%	28,000
	#224	9,600					
	Total	25,600	Total	40,000			

SUMMARY OF COSTS

Dir. Materials	25,600
Dir. Labor	40,000
Overhead	28,000
Total Cost of Job	93,600

FINISHED

JOB COST SHEET

Customer's Name Fargo, Inc. **Job No.** 451

	Direct Materials		Direct Labor		Overhead Costs Applied		
Date	Requisition Number	Amount	Time Ticket Number	Amount	Date	Rate	Amount
	#225	8,000	#11-20	32,000	June--	70%	22,400
	#226	4,800					
	Total		Total				

SUMMARY OF COSTS

Dir. Materials	
Dir. Labor	
Overhead	
Total cost of Job	

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Problem 2-5B *(Continued)*

MATERIALS LEDGER CARD

Item: Material M

	Received				Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									120	200	24,000
	#20	150	200	30,000					270	200	54,000
					#223	80	200	16,000	190	200	38,000
					#225	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	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									80	160	12,800
	#21	70	160	11,200					150	160	24,000
					#224	60	160	9,600	90	160	14,400
					#226	30	160	4,800	60	160	9,600

MATERIALS LEDGER CARD

Item: Paint

	Received				Issued				Balance		
Date	Receiving Report	Units	Unit Price	Total Price	Requi-sition	Units	Unit Price	Total Price	Units	Unit Price	Total Price
June 1									44	72	3,168
					#227	12	72	864	32	72	2,304

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Problem 2-5B *(Continued)*

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

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Problem 2-5B *(Continued)*

j. The ending balance in Factory Overhead is computed as:

Actual Factory Overhead	
Miscellaneous overhead	**$36,800**
Indirect materials	**864**
Indirect labor	**12,000**
Total actual factory overhead	**49,664**
Factory overhead applied	**50,400**
Overapplied overhead	**$ (736)**

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SERIAL PROBLEM — SP 2

Serial Problem—SP 15, 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 602 in May:**

Job 602	$1,500	
Less prior costs	(600)	$ 900
Job 603		3,300
Job 604		2,700
Total materials used (requisitioned)		$6,900

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 602 in May:**

Job 602	$ 800	
Less prior costs	(180)	$ 620
Job 603		1,420
Job 604		2,100
Total direct labor		$4,140

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 602 and 604:**

	Job 602	Job 604
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 602 and 603:**

	Job 602	Job 603	Total
Direct materials	$1,500	$3,300	$4,800
Direct labor	800	1,420	2,220
Overhead	400	710	1,110
Total transferred cost	$2,700	$5,430	$8,130

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Accounting Analysis — AA 2-1

1. **Actual inventory changes and operating cash flow effects as found on the cash flow statement (amounts are in $millions)**

Apple	Year Ending Sept. 30, 2017	Year Ending Sept. 24, 2016
Inventory change	Increase	Decrease
Operating cash flow effect from inventory change	Decrease of $2,723	Increase of $217

2. **A successful JIT system should reduce inventory levels (*a*). This reduction in inventory should increase operating cash flows (*b*). 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.**

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Comparative Analysis — AA 2-2

1.

Apple ($millions)	Year Ended Sept. 30, 2017	Year Ended Sept. 24, 2016
Gross margin.....	$88,186	$84,263
Net sales	$229,234	$215,639
Gross margin ratio.....	0.385	0.391

2.

Google ($millions)	Year Ended Dec. 31, 2017	Year Ended Dec. 31, 2016
Gross margin*	$65,272	$55,134
Net sales	$110,855	$90,272
Gross margin ratio.....	0.589	0.611

*Computed as Revenues – Cost of Revenues

3. For both Apple and Google, gross margin ratios decreased in fiscal-year 2017 relative to their ratios in fiscal-year 2016. Neither company improved its control of costs during 2017.

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Global Analysis — AA 2-3

1.

	APPLE As of Sept. 30, 2017	SAMSUNG As of Dec. 31 2017
Inventory.....	$4,855*	₩24,983,355**
Total assets	$375,319	₩301,752,090
Inventory/total assets....	1.29%	8.28%

*$ millions
**millions of Korean won

2. Apple has a lower ratio of inventory to total assets (1.29%) compared to Samsung (8.28%). Based on this ratio Apple's inventory policy more closely follows a JIT system.

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Ethics Challenge — BTN 2-1

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.

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Communicating in Practice — BTN 2-2

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.**

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Taking It to the Net — BTN 2-3

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

The website [softwareconnect.com/construction/amsi-construction-software/] 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 2-4

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.**

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Entrepreneurial Decision — BTN 2-5

1. **A job cost sheet for a service company would likely not contain many costs for direct materials. Often, service providers simply include materials in their overhead costs. A manufacturing company converts raw materials into finished goods, thus its job cost sheet would accumulate and track costs of direct materials for each job.**

2. **Examples of direct labor and overhead costs for Brennan Agranoff include:**

   Direct Materials: Socks

   Direct Labor: Wages/salaries of employees printing socks.

   Overhead: Brennan's overhead costs likely include the cost of supplies (ink, packaging), insurance, licenses and permits, and depreciation on printing equipment.

Hitting the Road — BTN 2-6

1. **The framework for the job cost sheet should follow that in the third 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.**

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CHAPTER 2
JOB ORDER COSTING AND ANALYSIS

Related Assignment Materials

Student Learning Objectives	*Questions*	*Quick Studies**	*Exercises**	*Problems**	*AA and BTN*
Conceptual objectives:					
C1. Describe important features of job order production.	10, 11, 12, 13	2-1, 2-3	2-1		BTN 2-2, BTN 2-3, BTN 2-4, BTN 2-5
C2. Explain job cost sheets and how they are used in job order costing.	3, 4	2-2, 2-15	2-2, 2-3		BTN 2-2, BTN 2-5, BTN 2-6
Analytical objectives:					
A1 Apply job order costing in pricing services.	2, 14	2-13, 2-14	2-18, 2-19		
Procedural objectives:					
P1. Describe and record the flow of materials costs in job order costing.	5, 6	2-4, 2-10	2-4, 2-5, 2-6, 2-7, 2-8, 2-13, 2-20	2-1, 2-2, 2-3, 2-5, SP GL 2-1	AA 2-1, AA 2-2, AA 2-3, BTN 2-6
P2. Describe and record the flow of labor costs in job order costing.	7	2-5, 2-10 2-12	2-4, 2-5, 2-6, 2-7, 2-9	2-1, 2-2, 2-3, 2-5, SP, GL 2-1, ES	BTN 2-6
P3. Describe and record the flow of overhead costs in job order costing.	1, 2, 8, 11	2-6, 2-7, 2-8, 2-9, 2-10	2-4, 2-5, 2-6, 2-7, 2-10, 2-11, 2-12, 2-15, 2-16, 2-17	2-1, 2-2, 2-3, 2-4, 2-5, SP, GL 2-1	BTN 2-3, BTN 2-6
P4. Determine adjustments for overapplied and underapplied factory overhead.	9	2-11, 2-12	2-6, 2-7, 2-13, 2-14, 2-15, 2-16	2-1, 2-2, 2-4, 2-5, GL 2-1	

See additional information on next page that pertains to these quick studies, exercises, and problems.
SP refers to the Serial Problem
AA refers to Accounting Analysis
BTN refers to Beyond the Numbers
GL refers to General Ledger Problems
Questions with Guided Example videos

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Additional Information on Related Assignment Material

See Chapter 1 of the Instructor's Resource Manual for more information on materials for this text available in Connect.

Connect

Available on the instructor's course-specific website, Connect:

- All numerical Quick Studies, all Exercises and Problems Set A.
  - Connect also provides algorithmic versions for Quick Study, Exercises, and Problems.
- General Ledger Problems
- Excel Simulations
- LearnSmart/SmartBook

Hints/Guided Examples

Please note that the Guided Examples are labeled as "Hints" in Connect assignments. The animated PowerPoints without the video and audio functions for the Guided Examples are also available in the Connect Instructor Library and Exercise Presentations. **These are indicated in the Related Assignment Materials grid on page 1 in blue bold font.**

Need-to-Know Videos

LO	Need-to-Know	Title	Time
C2	2-1	Job Cost Sheet	1:01
P1	2-2	Recording Direct Materials	1:04
P2	2-3	Recording Direct Labor	0:53
P3	2-4	Recording Applied Overhead	1:51
P3	2-5	Recording Actual Overhead	1:30
P4	2-6	Adjusting Overhead	1:56

Concept Overview Videos, (COV's)

LO	Title	Time
C1	Describe important features of job order production.	
	Job Order Production	1:25
	Production Activities in Job Order Costing	1:07
	Cost Flows	1:01
C2	Explain job cost sheets and how they are used in job order costing.	
	Job Cost Sheet	0:56
	Job Cost Sheet – Cost Flows	2:03
A1	Apply job order costing in pricing services.	
	Pricing for Services	1:48
P1	Describe and record the flow of materials costs in job order costing.	
	Materials Cost Flows and Documents	1:00
	Materials Cost Flows – Journal Entries	0:48
P2	Describe and record the flow of labor costs in job order costing.	
	Labor Cost Flows and Documents	0:41
	Labor Cost Flows – Journal Entries	0:41
P3	Describe and record the flow of overhead costs in job order costing.	
	Set Predetermined Overhead Rate and Apply Estimated Overhead	2:07
	Apply Estimated Overhead – Illustration	1:22
	Record Actual Overhead	2:19
P4	Determine adjustments for overapplied and underapplied factory overhead.	

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	Adjust Underapplied or Overapplied Overhead	1:09
	Adjust Underapplied or Overapplied Overhead - Illustration	0:51

Synopsis of Chapter Revision

NEW opener—HoopSwagg and entrepreneurial assignment.
Revised discussions of manufacturing costs and link between job cost sheets and general ledger.
Added graphic linking job cost sheets and general ledger accounts.
Enhanced exhibit of four-step overhead process.
Added formula for computing applied overhead.
New short discussion of cost-plus pricing.
Added margin T-accounts and calculations for clarity.
New Cheat Sheet reinforces chapter content.
Added new Quick Study.
Added new analysis assignments: Company Analysis, Comparative Analysis, and Global Analysis.

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Chapter Outline

I. Job Order Costing

A. Cost accounting system

1. Accumulates manufacturing costs and assigns them to products and services.
2. Provides timely information about inventories and costs helpful in managers' efforts to control costs and determine selling prices.
3. Two basic types of cost accounting systems are *job order* costing and *process* costing.
   a. Job Order Production—producing products or providing services individually designed to meet the needs of a specific customer (special orders).
      i. The production activities for a customized product are called a *job*.
      ii. A *job lot* involves producing more than one unit of a unique product.
   b. Process Operations
      i. Mass production of products in a continuous flow of steps.
      ii. Designed to mass produce large quantities of identical products. Covered in Chapter 3.

B. Production Activities in Job Order Costing
an overview of job order production activity and cost flows is shown in Exhibit 2.2.

1. Cost Flows:
   a. Because they are product costs, manufacturing costs flow through inventory accounts (Raw Materials Inventory, Work in Process Inventory, Finished Goods Inventory) until the goods are sold.
   b. While a job is being produced, costs are accumulated in *Work in Process Inventory*.
   c. When the goods are completed, the accumulated costs are transferred to from Work in Process to *Finished Goods Inventory.*
   d. When the Finished goods are delivered to the customer, the accumulated costs are transferred from Finished Goods inventory to Cost of Goods Sold.
2. Job Cost Sheet—separate record maintained for each job used to record costs.
   a. Classifies costs as direct materials, direct labor, or overhead.
   b. Used by managers to monitor costs incurred to date and to predict and control costs to complete each job.
   c. Accumulated job costs are kept in the *Work in Process Inventory* while goods are being produced.
   d. Job cost sheets filed for all of the jobs in process make up a subsidiary ledger controlled by the Work in Process Inventory account in the general ledger.
   e. The balance in Work in Process at any point in time is the sum of the costs on the job cost sheets that are not yet completed.
   f. Finished job cost sheets—moved from jobs in process file to finished jobs file (subsidiary ledger controlled by Finished Goods Inventory) awaiting delivery to customers.

II. Materials and Labor Costs Flows

1. Cost Flows and Documents—the three cost components and documents used to account for them are:
   Materials Cost Flows and Documents
   a. *Receiving report*—Source document used to record the quantity and cost of items received. Materials purchased are used as a debit to Raw Materials Inventory and a credit to Accounts Payable.
   b. *Materials ledger cards* (or electronic files)—perpetual records that are updated each time units are purchased and each time units are issued for use in production. Serves as the
   c. Subsidiary ledger for the Raw Materials Inventory account.
2. Materials Purchases – includes direct and indirect materials. Updates to individual materials

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ledger cards. Debit Raw Materials Inventory to increase.

3. Materials Use (Requisition)
   a. *Materials Requisition*—document identifying the type and quantity of material needed in production. Job number is also identified on direct materials requisitions.
   b. *Job Cost Sheet*—accumulates the cost of direct materials (from materials ledger card) as they are placed into production on a job. Recorded as a debit to Goods in Process Inventory and a credit to Raw Materials Inventory.
4. Labor Cost Flows and Documents
   a. Time tickets - used by employees to record hours worked. Used to determine total labor costs for pay period. They indicate how much time employees spent on each job and are used to assign (direct) labor costs to specific jobs and (indirect) to overhead. Direct labor costs are debited to Work in Process Inventory and credited to Factory Wages Payable.
   b. *Job Cost Sheets*—accumulates the cost of direct labor (from time tickets and related entry) as these costs are incurred.

III. Overhead Costs

a. Overhead costs can't be traced to individual jobs. The accounting for overhead follows a 4-step process shown in Exhibit 2.11. Managers must first estimate total overhead for the coming period. We can't wait until the end of the period to apply overhead costs to jobs because job order costing using perpetual inventory which require up to date costs. The estimated overhead cost is needed to estimate the job's total costs before complete.

b. Step 1: Set Predetermined Overhead Rate
   i. Requires an estimated of total overhead cost and an allocation factory such as total direct labor, total labor hours, or total machine hours.
   ii. Predetermined Overhead rate = Estimated overhead costs divided by estimated activity based
   iii. The allocation case should have a cause and effect relation between the base and the overhead costs.

c. Step 2: Apply Estimated Overhead to Specific Jobs
   i. Predetermined overhead rate times actual activity where the activity is the allocation base such as direct labor cost, direct labor hours, machine hours.
   ii. The entry to record the applied overhead is a debit to work in process inventory and a credit to factory overhead.
   iii. The overhead is allocated to each job based on the resource the job used (rate x actual activity).
   iv. At this point, estimated (allocated) overhead is posted to the general ledger accounts (Work in Process and Factory Overhead) and to the individual job cost sheets.

d. Step 3: Record Actual Overhead costs
   i. Actual factory overhead costs include indirect materials, indirect labor, supplies, utilities, adjusting entries for depreciation on factory assets, etc.
   ii. Indirect materials ledger cards in factory overhead ledger—accumulates indirect material costs as they are placed into production. This subsidiary ledger is controlled by the Factory Overhead account in the general ledger. Use of indirect materials is recorded as a debit to Factory overhead and a credit to Raw Materials Inventory.
   iii. Indirect labor card in Factory Overhead Ledger—accumulates indirect labor costs (from time tickets and related entry). Entry to record indirect labor costs debits Factory Overhead and credits Factory Wages Payable.
   iv. Other sources include vouchers authorizing payments for items such as supplies

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or utilities and adjusting entries for costs such as depreciation. Debit Factory Overhead and Credit the other accounts such as Cash, Accounts Payable, Accumulated Depreciation, etc.

e. Step 4: Adjusting Factory Overhead—

i. Factory Overhead T-Account

a) The debit side shows the actual amount of factory overhead incurred during the period based on bills received.

b) The credit side shows the amount applied during the period that was an estimate based on the predetermined overhead rate.

c) A debit balance in the FOH account indicated less was applied than incurred; an underapplied FOH amount.

d) A credit balance in the FOH account indicates more was applied than incurred; an overapplied FOH amount.

ii. Underapplied and Overapplied Overhead

a) Factory Overhead debit balance (underapplied amount) is credited (closed) and debited (charged) to Cost of Goods Sold.

b) Factory Overhead credit balance (overapplied amount) is debited (closed) and credited to Cost of Goods Sold.

6. Summary of Cost Flows—Summary journal entries are used to record cost flows as follows:

a. Into (debit) Raw Materials Inventory as acquired.

b. From (credit) Raw Materials Inventory to (debit) Work In Process Inventory (direct materials) and (debit) Factory Overhead (indirect materials) as good are requisitioned. Direct material costs also accumulated on Job Cost Sheets.

c. Into (debit) Work In Process Inventory (direct labor) and (debit) Factory Overhead (indirect labor) as labor costs are analyzed. Direct labor costs also accumulated on Job Cost Sheets.

e. Into (debit) Factory Overhead as other overhead costs are incurred.

f. From (credit) Factory Overhead and into (debit) Work In Process as overhead costs are applied using overhead rate.

g. From (credit) Work In Process Inventory to (debit) Finished Goods Inventory as jobs are completed. Full cost from Job Cost Sheets.

h. From (credit) Finished Goods Inventory to (debit) Cost of Goods Sold as goods are sold.

i. Any under or over applied factory overhead cost is accounted for in an adjustment to Cost of Goods Sold and Factory Overhead

7. Schedule of Cost of Goods Manufactured

a. Similar to statement covered in chapter 1.

b. Key difference: total manufacturing costs include *overhead applied* rather than actual overhead costs.

III. Decision Analysis—Pricing for Services

A. Service providers also use job order costing.

B. Procedure to determine:

1. Determine direct labor costs
2. Determine the overhead based on predetermined rate(s).
3. Combine labor and overhead to obtain cost of job.

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Chapter 2 Alternate Demo Problem

The following information is the Work in Process and Factory Overhead Accounts for Superior Company:

Work in Process Inventory

Beg Inv.	302,000		
Direct Materials	280,000		
Direct Labor	120,000		
Overhead Applied	96,000		
		Costs transferred to Finished Goods Inv.	548,000
End Inv.	250,000		

Factory Overhead

Actual Overhead	98,000	96,000	Applied Overhead

Required:

1. **Prepare a manufacturing statement for Superior Company for 2019.**
2. **Prepare the entry to adjust for under or over applied overhead.**

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Chapter 2 Solution: Alternate Demo Problem

SUPERIOR MANUFACTURING COMPANY
Manufacturing Statement
For Year Ended December 31, 2019

Direct materials used	$280,000	
Direct labor	120,000	
Factory Overhead Applied	96,000	
Total manufacturing costs	496,000	
Work in Process Inventory 1/1/19	302,000	302,000
Total goods in process during the year	800,000	
Work in process inventory, 12/31/19	250,000	
Cost of goods manufactured		$548,000

Adjusting entry for under or over-applied overhead

Factory Overhead			
Actual Overhead	98,000	96,000	Applied Overhead
Under applied	2,000		

Dec 31	Cost of Goods Sold	2,000	
	Factory Overhead		2,000
	To adjust for under applied overhead costs		

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