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.
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.

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.

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)

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

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%

Quick Study 2-7 (10 minutes)

$$\text{Rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated machine hours}} = \frac{\$560{,}000}{1{,}400} = \$400 \text{ per machine hour}$$

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

Quick Study 2-10 (10 minutes)

1.

JOB COST SHEET Job 1	
Direct materials	$ 5,000
Direct labor	9,000
Factory overhead (From QS 15-9)	2,000
Total	$16,000

JOB COST SHEET Job 2	
Direct materials	$ 7,000
Direct labor	4,000
Factory overhead (From QS 15-9)	2,800
Total	$13,800

JOB COST SHEET Job 3	
Direct materials	$1,500
Direct labor	3,000
Factory overhead (From QS 15-9)	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.

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**

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)

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

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

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

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.		

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.		
e.	Accounts Receivable	22,000	
	Sales		22,000
	Record sale of job 120.		

***Total of direct materials, direct labor, and overhead applied to this job in June ($11,040) and July ($4,960).**

Exercise 2-5 (continued)

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

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.		

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		

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		

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		

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.***

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.

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.		

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**

3.

Total cost of finished goods inventory	**$490,000**
Deduct: Direct materials	**(250,000)**
Direct labor and factory overhead costs	**$240,000**

We also know that the total of direct labor costs (*X*) and factory overhead costs (0.6*X*) equals $240,000. Thus, to get the individual amounts we need to solve: [*X* + 0.6*X* = $240,000]. The solution is:

Direct labor costs = $150,000

Factory overhead costs = $150,000 x 0.6 = $90,000

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

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. 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.

c. Is it willing to meet the expected low bid of the competition? In the example above, would it be acceptable to earn only $71,875 on this job (about a 25% gross profit ratio), rather than the normal $80,000 (about a 27% gross profit ratio)? Can it earn a better profit on another job?

There is no exact answer to these questions, but Frey must consider these and other factors before it submits the bid.

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 (15 minutes)

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

*** 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	$ 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.		

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

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

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.

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.		

Problem 2-2A (*continued*)

Part 3

BERGAMO BAY COMPANY Trial Balance December 31, 2017	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

Problem 2-2A (*continued*)

Part 4

BERGAMO BAY COMPANY Income Statement For Year Ended December 31, 2017	
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, 2017		
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

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. That is, if overhead is underapplied by, say, $9,200, this amount would decrease by $5,600 when the error is corrected. Since underapplied overhead is charged directly to cost of goods sold, then cost of goods sold would decrease by $5,600 and net income would increase by $5,600— yielding a $5,600 increase in retained earnings on the balance sheet.

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.		

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%].		

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.**

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.		

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	

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

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).		

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)**

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.		

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

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

Problem 2-1B *(Concluded)*

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.

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.			

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, 2017

	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

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, 2017

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

Problem 2-2B *(Concluded)*

Part 4 (Concluded)

CAVALLO MFG. Balance Sheet December 31, 2017		
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.

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

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).		

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%].		

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.**

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.		

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	

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

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).		

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)**

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

Reporting in Action — BTN 2-1

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

Apple	Current Year	One Year Prior	Two Years Prior
Inventory change	Increase	Increase	Increase
Operating cash flow effect from inventory change	Decrease of $238	Decrease of $76	Decrease of $973

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.**

Comparative Analysis — BTN 2-2

1.

Apple ($millions)	Current Year	One Year Prior	Two Years Prior
Gross margin.....	$93,626	$70,537	$64,304
Net sales	$233,715	$182,795	$170,910
Gross margin ratio.....	0.401	0.386	0.376

2.

Google ($millions)	Current Year	One Year Prior	Two Years Prior
Gross margin*	$46,825	$40,310	$33,526
Net sales	$74,989	$66,001	$55,519
Gross margin ratio.....	0.624	0.611	0.604

*Computed as Revenues – Cost of Revenues

3. For both Apple and Google, gross margin ratios increased in the current and prior year relative to their amounts two years prior. This indicates both companies are successfully controlling costs as sales increase.

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.

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 [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 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 Neha Assar include:

Direct Labor: Wages/salaries of part-time mehndi artists.

Overhead: Neha's overhead costs likely include the cost of supplies (henna paste, applicators, rhinestones), insurance, licenses and permits, and travel costs.

Hitting the Road — BTN 2-8

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.

Global Decision — BTN 2-9

1. Actual inventory amounts and changes. Apple's amounts are in $millions and Samsung's amounts are in millions of Korean won.

Apple ($millions)	Balance, Current Year	Balance, Prior Year	Change in Inventory
Inventory.....	$2,349	$2,111	$238 Increase
Operating cash flow effect from inventory change			Decrease of $238

Samsung (₩millions)	Balance, Current Year	Balance, Prior Year	Change in Inventory
Inventory.....	₩18,811,794	₩17,317,504	₩1,494,290 Increase
Operating cash flow effect from inventory change			Decrease ₩1,494,290

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 increases in inventory yield decreases in operating cash flow; thus, decreases in inventory will yield increases 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 also increase operating income. In addition, losses from obsolete or damaged inventory should decline, also increasing operating income.

3. 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 directly compare changes expressed in U.S. dollars with those expressed in Korean won. We would have to translate U.S. dollars into Korean won (or vice versa) to be able to determine which company has experienced the largest changes in inventory over the past few years.

CHAPTER 2
JOB ORDER COSTING AND ANALYSIS

Related Assignment Materials

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

See additional information on next page that pertains to these quick studies, exercises and problems.
SP refers to the Serial Problem
GL refers to the General Ledger Problems
ES refers to Excel Simulations

Additional Information on Related Assignment Material

Connect

Available on the instructor's course-specific website) repeats all numerical Quick Studies, all Exercises and Problems Set A. ***Connect*** also provides algorithmic versions for Quick Study, Exercises and Problems. It allows instructors to monitor, promote, and assess student learning. It can be used in practice, homework, or exam mode**.**

Connect Insight

The first and only analytics tool of its kind, Connect Insight is a series of visual data displays that are each framed by an intuitive question and provide at-a-glance information regarding how an instructor's class is performing. Connect Insight is available through Connect titles.

The Serial Problem (SP) for *Success Systems* continues in this chapter.

General Ledger

Assignable within Connect, General Ledger (GL) problems offer students the ability to see how transactions post from the general journal all the way through the financial statements. Critical thinking and analysis components are added to each GL problem to ensure understanding of the entire process. GL problems are auto-graded and provide instant feedback to the student.

Excel Simulations

Assignable within Connect, Excel Simulations allow students to practice their Excel skills—such as basic formulas and formatting—within the context of accounting. These questions feature animated, narrated Help and Show Me tutorials (when enabled). Excel Simulations are auto-graded and provide instant feedback to the student.

Synopsis of Chapter Revision

- NEW opener—Neha Assar and entrepreneurial assignment.
- Simplified discussion of cost accounting systems.
- Simplified direct material and direct labor cost flows and entries.
- Added time period information to graphic on 4-step overhead process.
- Simplified discussion of recording overhead costs.
- Added journal entry for depreciation expense on equipment in NTK 2-5.
- Revised exhibits for postings of direct materials, direct labor, and overhead to general ledger accounts and job cost sheets.
- Added section on using job cost sheet for managerial decisions.
- Added entries for transfers of costs to Finished Goods Inventory and to COGS.
- Expanded discussion of job order costing for service firms.
- New exhibit and cost flows for service firms.
- Expanded Sustainability section, including USPS and Neha Assar examples.
- New NTK on using the job cost sheet.
- Added new Quick Study and new Exercise on costing for service firms.

Chapter Outline

Notes

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* cost accounting and *process* cost accounting.
         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 is 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

Chapter Outline

Notes

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 Cost 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 subsidiary ledger for the Raw Materials Inventory account.
2. Materials Purchases – includes direct and indirect materials. Updates to individual materials 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.

Chapter Outline

Notes

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.
5. Overhead Cost Flows and Reports
   a. Overhead costs can't be traced to individual jobs. The accounting for overhead follows a 4-step process shown in Exhibit 19.11. 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.

Chapter Outline

Notes

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 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.

Chapter Outline

Notes

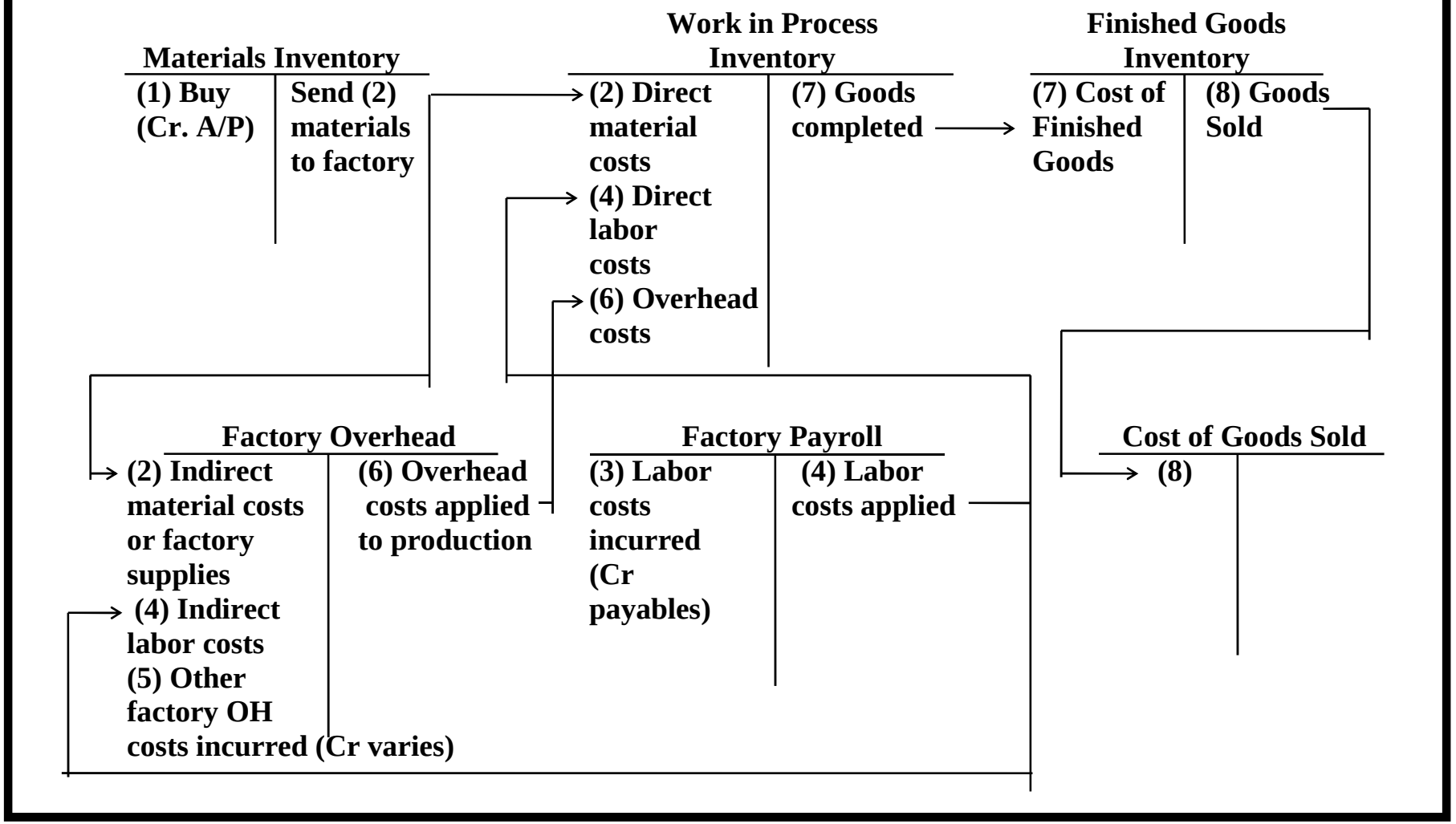
4. Summary of Cost Flows—Summary journal entries are used to record cost flows as follows:
   a. Into (debit) Raw Materials Inventory as acquired.
   b. From (credit) Raw Materials Inventory to (debit) Work In Process Inventory (direct materials) and (debit) Factory Overhead (indirect materials) as good 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
5. 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.

VISUAL #2-1

Tracing Product Costs Through a Cost Accounting System



VISUAL #2-2

Job Cost Sheet

Customer Build We Must, Inc. Job No. 114
Product Bracket-H3 Date Promised 10/1
Quantity 200 Dates: Started 9/1 Completed 9/20

Direct Material		Direct Labor			Cost Summary	
Mat'l. Req'n. No.	Amount	Payroll Summary Dated	Dept.	Amount	Direct Material	$ 900.00
					Direct Labor	600.00
667	$ 340.00	9/2	A	$ 70.00		
673	180.00	9/9	A	240.00	Factory Overhead (applied at):	
691	200.00	9/16	B	190.00		
623	180.00	9/23	B	100.00	150% of direct labor cost	900.00
Totals	$ 900.00			$ 600.00	Total Cost	$2,400.00
					Units Finished	200
					Unit Cost	$12.00

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 2017.**
2. **Prepare the entry to adjust for under or over applied overhead.**

Chapter 2 Solution: Alternate Demo Problem

SUPERIOR MANUFACTURING COMPANY
Manufacturing Statement
For Year Ended December 31, 2017

Direct materials used	$280,000	
Direct labor	120,000	
Factory Overhead Applied	96,000	
Total manufacturing costs	496,000	
Work in Process Inventory 1/1/17	302,000	302,000
Total goods in process during the year	800,000	
Work in process inventory, 12/31/17	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		

Chapter 2 – Job Order Costing and Analysis

		Click on links	
Exercise 2-3 page 69	Analysis of cost flows	Exercise 2-3	Exercise 2-3 Alt.
Exercise 2-4 page 69	Recording product costs	Exercise 2-4	Exercise 2-4 Alt.
Exercise 2-5 page 69	Manufacturing cost flows	Exercise 2-5	Exercise 2-5 Alt.
Exercise 2-6 page 70	Recording events in job order costing	Exercise 2-6	Exercise 2-6 Alt.
Exercise 2-7 page 70	Cost flows in a job order cost system	Exercise 2-7	Exercise 2-7 Alt.
Exercise 2-8 page 70	Journal entries for materials	Exercise 2-8	Exercise 2-8 Alt.
Exercise 2-9 page 70	Journal entries for labor	Exercise 2-9	Exercise 2-9 Alt.
Exercise 2-10 page 70	Journal entries for overhead	Exercise 2-10	Exercise 2-10 Alt.
Exercise 2-11 page 71	OH rates – Costs assigned to jobs	Exercise 2-11	Exercise 2-11 Alt.
Exercise 2-12 page 71	Analysis of costs assigned to WIP	Exercise 2-12	Exercise 2-12 Alt.
Exercise 2-13 page 71	Adjusting factory overhead	Exercise 2-13	Exercise 2-13 Alt.
Exercise 2-14 page 71	Adjusting factory overhead	Exercise 2-14	Exercise 2-14 Alt.
Exercise 2-15 page 72	OH computed, applied, and adjusted	Exercise 2-15	Exercise 2-15 Alt.
Exercise 2-16 page 72	OH computed, applied, and adjusted	Exercise 2-16	Exercise 2-16 Alt.
Exercise 2-17 page 72	OH rate calculation, allocation	Exercise 2-17	Exercise 2-17 Alt.

Exercise 2-3 page 69

As of the end of June, the job cost sheets at Racing Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	$15,000	$33,000	$27,000
Direct labor	8,000	14,200	21,000
Overhead	4,000	7,100	10,500

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, $6,000; direct labor, $1,800; and overhead, $900. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. Using this information, answer the following questions. (Assume this company's predetermined overhead rate did not change across these months).

Complete the given below table to calculate the cost of the raw materials requisitioned and direct labor cost incurred during June for each of the three jobs.

Direct Materials			
Job	May	June	Total
102	$6,000	$9,000	$15,000
103		33,000	33,000
104		27,000	27,000

Direct Labor			
Job	May	June	Total
102	$1,800	$6,200	$8,000
103		14,200	14,200
104		21,000	21,000

What predetermined overhead rate is used during June for Job 102?

$$\frac{\text{Overhead costs}}{\text{Direct labor costs}} \quad \frac{\$4,000}{\$8,000} \quad 50\%$$

As of the end of June, the job cost sheets at Racing Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	$15,000	$33,000	$27,000
Direct labor	8,000	14,200	21,000
Overhead	4,000	7,100	10,500

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, $6,000; direct labor, $1,800; and overhead, $900. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. Using this information, answer the following questions. (Assume this company's predetermined overhead rate did not change across these months).

How much total cost is transferred to finished goods during June?

Job 102 ($15,000 + $8,000 + $4,000)	$27,000
Job 103 ($33,000 + $14,200 + $7,100)	54,300
Total	$81,300

As of the end of June, the job cost sheets at Racing Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	$29,000	$81,000	$65,000
Direct labor	23,000	49,000	33,000
Overhead	11,040	23,520	15,840

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, $13,000; direct labor, $5,000; and overhead, $2,400. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. (Assume this company's predetermined overhead rate did not change across these months).

Calculate the cost of the raw materials requisitioned and direct labor cost incurred during June for each of the three jobs.

As of the end of June, the job cost sheets at Racing Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	$29,000	$81,000	$65,000
Direct labor	23,000	49,000	33,000
Overhead	11,040	23,520	15,840

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, $13,000; direct labor, $5,000; and overhead, $2,400. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. (Assume this company's predetermined overhead rate did not change across these months).

Direct Materials			
Job	May	June	Total
102	$13,000	$16,000	$29,000
103		81,000	81,000
104		65,000	65,000

Direct Labor			
Job	May	June	Total
102	$5,000	$18,000	$23,000
103		49,000	49,000
104		33,000	33,000

As of the end of June, the job cost sheets at Racing Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	$29,000	$81,000	$65,000
Direct labor	23,000	49,000	33,000
Overhead	11,040	23,520	15,840

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, $13,000; direct labor, $5,000; and overhead, $2,400. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. (Assume this company's predetermined overhead rate did not change across these months).

What predetermined overhead rate is used during June for Job 102?

Overhead costs	$11,040	48%
Direct labor costs	$23,000	

How much total cost is transferred to finished goods during June?

Job 102 ($29,000 + $23,000 + $11,040)	$63,040
Job 103 ($81,000 + $49,000 + $23,520)	153,520
Total	$216,560

Exercise 2-4 page 69

Starr Company reports the following information for August.

Raw materials purchased on account	$76,200
Direct materials used in production	$48,000
Direct labor incurred, but not yet paid	$15,350
Overhead rate	120% of direct labor cost

Prepare journal entries to record the following events.
1. Raw materials purchased.
2. Direct materials used in production.
3. Direct labor used in production, but not yet paid.
4. Applied overhead.

	General Journal	Debit	Credit
1)	Raw materials inventory	76,200	
	Accounts payable		76,200
2)	Work in process inventory	48,000	
	Raw materials inventory		48,000
3)	Work in process inventory	15,350	
	Factory payroll payable		15,350
4)	Work in process inventory	18,420	
	Factory overhead		18,420

Starr Company reports the following information for August.

Raw materials purchased on account	$80,000
Direct materials used in production	$60,000
Direct labor incurred, but not yet paid	$15,000
Overhead rate	110% of direct labor cost

Prepare journal entries to record the following events.
1. Raw materials purchased.
2. Direct materials used in production.
3. Direct labor used in production, but not yet paid.
4. Applied overhead.

	General Journal	Debit	Credit
1)	Raw materials inventory	80,000	
	Accounts payable		80,000
2)	Work in process inventory	60,000	
	Raw materials inventory		60,000
3)	Work in process inventory	15,000	
	Factory payroll payable		15,000
4)	Work in process inventory	16,500	
	Factory overhead		16,500

Exercise 2-5 page 69

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $6,000, direct labor of $2,800, and applied overhead of $2,240. Custom Cabinetry applies overhead at the rate of 80% of direct labor cost. During July, Job 120 is sold (on account) for $22,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$1,000	$6,000	$2,500	$9,500
Direct labor	2,200	3,700	2,100	8,000
Overhead applied	1,760	2,960	1,680	6,400
Total	$4,960	$12,660	$6,280	$23,900

1. Prepare journal entries for the following in July.
   a. Direct materials used in production.
   b. Direct labor used in production, but not yet paid.
   c. Overhead applied.
   d. The sale of Job 120.
   e. Cost of goods sold for Job 120.
2. Compute the July 31 balances of the Work in Process Inventory and the Finished Goods Inventory general ledger accounts.

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $6,000, direct labor of $2,800, and applied overhead of $2,240. Custom Cabinetry applies overhead at the rate of 80% of direct labor cost. During July, Job 120 is sold (on account) for $22,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$1,000	$6,000	$2,500	$9,500
Direct labor	2,200	3,700	2,100	8,000
Overhead applied	1,760	2,960	1,680	6,400
Total	$4,960	$12,660	$6,280	$23,900

1. Prepare journal entries for the following in July.
   a. Direct materials used in production.
   b. Direct labor used in production, but not yet paid.
   c. Overhead applied.
   d. The sale of Job 120.
   e. Cost of goods sold for Job 120.

	General Journal	Debit	Credit
a)	Work in process inventory	9,500	
	Raw materials inventory		9,500
b)	Work in process inventory	8,000	
	Factory payroll payable		8,000
c)	Work in process inventory	6,400	
	Factory overhead		6,400
d)	Accounts receivable	22,000	
	Sales		22,000
e)	Cost of goods sold (Job 120 BI $11,040 + $4,960)	16,000	
	Finished goods inventory		16,000

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $6,000, direct labor of $2,800, and applied overhead of $2,240. Custom Cabinetry applies overhead at the rate of 80% of direct labor cost. During July, Job 120 is sold (on account) for $22,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$1,000	$6,000	$2,500	$9,500
Direct labor	2,200	3,700	2,100	8,000
Overhead applied	1,760	2,960	1,680	6,400
Total	$4,960	$12,660	$6,280	$23,900

2. Compute the July 31 balances of the Work in Process Inventory and the Finished Goods Inventory general ledger accounts.

Work in Process Inventory			
Beg. Inv	11,040		
DM	9,500		
DL	8,000		
OH applied	6,400		
Avail for Mfg	34,940		
		Job 120	16,000
		Job 121	12,660
End. Inv (Job 122)	6,280		

Finished Goods Inventory			
Beg. Inv	0		
Job 120	16,000		
Job 121	12,660		
Avail for Sale	28,660		
		Job 120	16,000
End. Inv (Job 121)	12,660		

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $3,000, direct labor of $4,000, and applied overhead of $2,800. Custom Cabinetry applies overhead at the rate of 70% of direct labor cost. During July, Job 120 is sold (on account) for $20,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$2,000	$7,000	$4,000	$13,000
Direct labor	1,400	5,000	2,600	9,000
Overhead applied	980	3,500	1,820	6,300
Total	$4,380	$15,500	$8,420	$28,300

1. Prepare journal entries for the following in July.
   a. Direct materials used in production.
   b. Direct labor used in production, but not yet paid.
   c. Overhead applied.
   d. The sale of Job 120.
   e. Cost of goods sold for Job 120.
2. Compute the July 31 balances of the Work in Process Inventory and the Finished Goods Inventory general ledger accounts.

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $3,000, direct labor of $4,000, and applied overhead of $2,800. Custom Cabinetry applies overhead at the rate of 70% of direct labor cost. During July, Job 120 is sold (on account) for $20,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$2,000	$7,000	$4,000	$13,000
Direct labor	1,400	5,000	2,600	9,000
Overhead applied	980	3,500	1,820	6,300
Total	$4,380	$15,500	$8,420	$28,300

1. Prepare journal entries for the following in July.
   a. Direct materials used in production.
   b. Direct labor used in production, but not yet paid.
   c. Overhead applied.
   d. The sale of Job 120.
   e. Cost of goods sold for Job 120.

	General Journal	Debit	Credit
a)	Work in process inventory	13,000	
	Raw materials inventory		13,000
b)	Work in process inventory	9,000	
	Factory payroll payable		9,000
c)	Work in process inventory	6,300	
	Factory overhead		6,300
d)	Accounts receivable	20,000	
	Sales		20,000
e)	Cost of goods sold (Job 120 BI $9,800 + $4,380)	14,180	
	Finished goods inventory		14,180

Custom Cabinetry has one job in process (Job 120) as of June 30; at that time, its job cost sheet reports direct materials of $3,000, direct labor of $4,000, and applied overhead of $2,800. Custom Cabinetry applies overhead at the rate of 70% of direct labor cost. During July, Job 120 is sold (on account) for $20,000. Job 121 is started and completed, and Job 122 is started and still in process at the end of the month. Custom Cabinetry incurs the following costs during July.

July Product Costs	Job 120	Job 121	Job 122	Total
Direct materials	$2,000	$7,000	$4,000	$13,000
Direct labor	1,400	5,000	2,600	9,000
Overhead applied	980	3,500	1,820	6,300
Total	$4,380	$15,500	$8,420	$28,300

2. Compute the July 31 balances of the Work in Process Inventory and the Finished Goods Inventory general ledger accounts.

Work in Process Inventory			
Beg. Inv	9,800		
DM	13,000		
DL	9,000		
OH applied	6,300		
Avail for Mfg	38,100		
		Job 120	14,180
		Job 121	15,500
End. Inv (Job 122)	8,420		

Finished Goods Inventory			
Beg. Inv	0		
Job 120	14,180		
Job 121	15,500		
Avail for Sale	29,680		
		Job 120	14,180
End. Inv (Job 121)	15,500		

Exercise 2-6 page 70

Prepare summary journal entries to record the following transactions and events a through h for a company in its first month of operations.

a. Raw materials purchased on account, $90,000.
b. Direct materials used in production, $36,500. Indirect materials used in production, $19,200.
c. Paid cash for factory payroll, $50,000. Of this total, $38,000 is for direct labor and $12,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $11,475.
e. Applied overhead at the rate of 125 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $56,800.
g. Sold jobs on account for $82,000. The jobs had a cost of $56,800.

a. Raw materials purchased on account, $90,000.
b. Direct materials used in production, $36,500. Indirect materials used in production, $19,200.
c. Paid cash for factory payroll, $50,000. Of this total, $38,000 is for direct labor and $12,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $11,475.
e. Applied overhead at the rate of 125 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $56,800.
g. Sold jobs on account for $82,000. The jobs had a cost of $56,800.

	General Journal	Debit	Credit
a)	Raw materials inventory	90,000	
	Accounts payable		90,000
b-1)	Work in process inventory	36,500	
	Raw materials inventory		36,500
b-2)	Factory overhead	19,200	
	Raw materials inventory		19,200
c)	Work in process inventory	38,000	
	Factory overhead	12,000	
	Cash		50,000

a. Raw materials purchased on account, $90,000.
b. Direct materials used in production, $36,500. Indirect materials used in production, $19,200.
c. Paid cash for factory payroll, $50,000. Of this total, $38,000 is for direct labor and $12,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $11,475.
e. Applied overhead at the rate of 125 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $56,800.
g. Sold jobs on account for $82,000. The jobs had a cost of $56,800.

	General Journal	Debit	Credit
d)	Factory overhead	11,475	
	Cash		11,475
e)	Work in process inventory ($38,000 x 125%)	47,500	
	Factory overhead		47,500
f)	Finished goods inventory	56,800	
	Work in process inventory		56,800
g)	Accounts receivable	82,000	
	Sales		82,000
g-1)	Cost of goods sold	56,800	
	Finished goods inventory		56,800

Prepare summary journal entries to record the following transactions and events a through g for a company in its first month of operations.

a. Raw materials purchased on account, $96,000.
b. Direct materials used in production, $54,000. Indirect materials used in production, $13,000.
c. Paid cash for factory payroll, $47,000. Of this total, $38,000 is for direct labor and $9,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $19,000.
e. Applied overhead at the rate of 120 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $123,800.
g. Sold jobs on account for $173,000. The jobs had a cost of $123,800.

a. Raw materials purchased on account, $96,000.
b. Direct materials used in production, $54,000. Indirect materials used in production, $13,000.
c. Paid cash for factory payroll, $47,000. Of this total, $38,000 is for direct labor and $9,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $19,000.
e. Applied overhead at the rate of 120 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $123,800.
g. Sold jobs on account for $173,000. The jobs had a cost of $123,800.

	General Journal	Debit	Credit
a)	Raw materials inventory	96,000	
	Accounts payable		96,000
b-1)	Work in process inventory	54,000	
	Raw materials inventory		54,000
b-2)	Factory overhead	13,000	
	Raw materials inventory		13,000
c)	Work in process inventory	38,000	
	Factory overhead	9,000	
	Cash		47,000

a. Raw materials purchased on account, $96,000.
b. Direct materials used in production, $54,000. Indirect materials used in production, $13,000.
c. Paid cash for factory payroll, $47,000. Of this total, $38,000 is for direct labor and $9,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $19,000.
e. Applied overhead at the rate of 120 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $123,800.
g. Sold jobs on account for $173,000. The jobs had a cost of $123,800.

	General Journal	Debit	Credit
d)	Factory overhead	19,000	
	Cash		19,000
e)	Work in process inventory ($38,000 x 120%)	45,600	
	Factory overhead		45,600
f)	Finished goods inventory	123,800	
	Work in process inventory		123,800
g)	Accounts receivable	173,000	
	Sales		173,000
g-1)	Cost of goods sold	123,800	
	Finished goods inventory		123,800

a. Raw materials purchased on account, $96,000.
b. Direct materials used in production, $54,000. Indirect materials used in production, $13,000.
c. Paid cash for factory payroll, $47,000. Of this total, $38,000 is for direct labor and $9,000 is for indirect labor.
d. Paid cash for other actual overhead costs, $19,000.
e. Applied overhead at the rate of 120 percent of direct labor cost.
f. Transferred cost of jobs completed to finished goods, $123,800.
g. Sold jobs on account for $173,000. The jobs had a cost of $123,800.
h. Close underapplied or overapplied overhead to cost of goods sold.

Factory Overhead			
Ind. Mtls.	13,000		
Ind. Lbr.	9,000		
Other OH	19,000		
		OH Applied	45,600
		Overapplied OH	4,600

	General Journal	Debit	Credit
h)	Factory overhead	4,600	
	Cost of goods sold		4,600

Exercise 2-7 page 70

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Compute the following amounts for the month of May using T-accounts.

1) Cost of direct materials used
2) Cost of direct labor used
3) Cost of goods manufactured
4) Cost of goods sold
5) Gross profit
6) Overapplied or underapplied overhead

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600

Activities and information for May:

Raw materials purchases (paid with cash)	210,000
Factory payroll (paid with cash)	345,000
Factory overhead	
Indirect materials	15,000
Indirect labor	80,000
Other overhead costs	120,000
Sales (received in cash)	1,400,000
Predetermined overhead rate based on direct labor cost	70%

Raw Materials (RM)

RM - April 30	43,000		
RM Purch	210,000		
		15,000	Ind. Mtls.
		186,000	DM used
RM - May 31	52,000		

Work in Process (WIP)

WIP - April 30	10,200		
DM used	186,000		
DL Used	265,000		
OH applied	185,500		
		625,400	CofGM
WIP - May 31	21,300		

Factory Payroll Payable

Factory PR paid	345,000		
		80,000	Ind. Labor
		265,000	DL Used

Finished Goods (FG)

FG - April 30	63,000		
CofGM	625,400		
		652,800	CofGS
FG - May 31	35,600		

Factory Overhead

Ind. Mtls.	15,000		
Ind. Labor	80,000		
Other OH	120,000		
		185,500	OH applied ($265,000 x 70%)
Underapplied OH	29,500		

Income Statement (partial)

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

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on direct labor cost		55%

Compute the following amounts for the month of May using T-accounts.

1) Cost of direct materials used
2) Cost of direct labor used
3) Cost of goods manufactured
4) Cost of goods sold
5) Gross profit
6) Overapplied or underapplied overhead

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200

Activities and information for May:	
Raw materials purchases (paid with cash)	$197,000
Factory payroll (paid with cash)	177,000
Factory overhead	
Indirect materials	29,600
Indirect labor	26,600
Other overhead costs	41,600
Sales (received in cash)	930,000
Predetermined overhead rate based on direct labor cost	55%

Raw Materials (RM)

RM - April 30	47,000		
RM Purch	197,000		
		29,600	Ind. mtls.
		176,400	DM used
RM - May 31	38,000		

Work in Process (WIP)

WIP - April 30	10,800		
DM used	176,400		
DL used	150,400		
OH applied	82,720		
		398,720	CofGM
WIP - May 31	21,600		

Factory Payroll Payable

Total PR paid	177,000		
		26,600	Ind. labor
		150,400	DL used

Finished Goods (FG)

FG - April 30	56,000		
CofGM	398,720		
		420,520	CofGS
FG - May 31	34,200		

Factory Overhead

Ind. mtls.	29,600		
Ind. labor	26,600		
Other OH	41,600		
		82,720	OH applied ($150,400 x 55%)

Income Statement (partial)

Sales	$930,000
Cost of Goods Sold	(420,520)
Gross profit	$509,480

1)	Cost of direct materials used.	$176,400	
2)	Cost of direct labor used.	150,400	
3)	Cost of goods manufactured.	398,720	
4)	Cost of goods sold (Ignore any overapplied or underapplied overhead)	420,520	
5)	Gross profit.	509,480	
6)	Over (under) applied overhead.	15,080	Underapplied

Raw Materials (RM)

RM - April 30	47,000		
RM Purch	197,000		
		29,600	Ind. mtls.
		176,400	DM used
RM - May 31	38,000		

Work in Process (WIP)

WIP - April 30	10,800		
DM used	176,400		
DL used	150,400		
OH applied	82,720		
		398,720	CofGM
WIP - May 31	21,600		

Factory Payroll Payable

Total PR paid	177,000		
		26,600	Ind. labor
		150,400	DL used

Finished Goods (FG)

FG - April 30	56,000		
CofGM	398,720		
		420,520	CofGS
FG - May 31	34,200		

Factory Overhead

Ind. mtls.	29,600		
Ind. labor	26,600		
Other OH	41,600		
		82,720	OH applied
Underapplied	15,080		

Income Statement (partial)

Sales	$930,000
Cost of Goods Sold	(420,520)
Gross profit	$509,480

Exercise 2-8 page 70

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Prepare journal entries for the following events for the month of May.

1) Raw materials purchases for cash.
2) Direct materials usage.
3) Indirect materials usage.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Raw Materials (RM)			
RM - April 30	43,000		
RM Purch	210,000		
		15,000	Ind. Mtls.
		186,000	DM used
RM - May 31	52,000		

1) Raw materials purchases for cash.
2) Direct materials usage.
3) Indirect materials usage.

	General Journal	Debit	Credit
1)	Raw materials inventory	210,000	
	Cash		210,000
2)	Work in process inventory	186,000	
	Raw materials inventory		186,000
3)	Factory overhead	15,000	
	Raw materials inventory		15,000

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on direct labor cost		55%

Prepare journal entries for the following events for the month of May.

1) Raw materials purchases for cash.
2) Direct materials usage.
3) Indirect materials usage.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate		55%

1) Raw materials purchases for cash.
2) Direct materials usage.
3) Indirect materials usage.

Raw Materials (RM)			
RM - April 30	47,000		
RM Purch	197,000		
		29,600	Ind. Mtls.
		176,400	DM used
RM - May 31	38,000		

	General Journal	Debit	Credit
1)	Raw materials inventory	197,000	
	Cash		197,000
2)	Work in process inventory	176,400	
	Raw materials inventory		176,400
3)	Factory overhead	29,600	
	Raw materials inventory		29,600

Exercise 2-9 page 70

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Prepare journal entries for the following events for the month of May.

1) Direct labor usage.
2) Indirect labor usage.
3) Total payroll paid in cash.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Factory Payroll Payable			
		265,000	DL Used
		80,000	Ind. Labor
Total PR paid	345,000		
		- 0 -	

	General Journal	Debit	Credit
1)	Work in process inventory	265,000	
	Factory payroll payable		265,000
2)	Factory overhead	80,000	
	Factory payroll payable		80,000
3)	Factory payroll payable	345,000	
	Cash		345,000

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	**April 30**	**May 31**
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on direct labor cost		55%

Prepare journal entries for the following events for the month of May.

1) Direct labor usage.
2) Indirect labor usage.
3) Total payroll paid in cash.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate		55%

Factory Payroll Payable			
		150,400	DL Used
		26,600	Ind. Labor
Total PR paid	177,000		
		- 0 -	

1) Direct labor usage. ($177,000 - $26,600)
2) Indirect labor usage.
3) Total payroll paid in cash.

	General Journal	Debit	Credit
1)	Work in process inventory	150,400	
	Factory payroll payable		150,400
2)	Factory overhead	26,600	
	Factory payroll payable		26,600
3)	Factory payroll payable	177,000	
	Cash		177,000

Exercise 2-10 page 70

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Prepare journal entries for the following events for the month of May.

1) Factory overhead excluding indirect materials and indirect labor (record credit to Other Accounts).
2) Application of overhead to work in process.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Factory Overhead		
Ind. Mtls.	15,000	
Ind. Labor	80,000	
Other OH	120,000	
		185,500 OH applied
Underapplied OH	29,500	

Total Factory payroll	$345,000
Indirect labor	80,000
Direct labor	$265,000

Prepare journal entries for the following events for the month of May.

1) Factory overhead excluding indirect materials and indirect labor (record credit to Other Accounts).
2) Application of overhead to work in process.

	General Journal	Debit	Credit
1)	Factory overhead	120,000	
	Other accounts		120,000
2)	Work in process inventory ($265,000 x 70%)	185,500	
	Factory overhead		185,500

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on direct labor cost		55%

Prepare journal entries for the following events for the month of May.

1) Factory overhead excluding indirect materials and indirect labor (record credit to Other Accounts).
2) Application of overhead to work in process.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on DL cost		55%

Factory Overhead		
Ind. Mtls.	29,600	
Ind. Labor	26,600	
Other OH	41,600	
		82,720 OH applied
Underapplied OH	15,080	

Total Factory payroll	$177,000
Indirect labor	26,600
Direct labor	$150,400

1) Factory overhead excluding indirect materials and indirect labor (record credit to Other Accounts).
2) Application of overhead to work in process.

	General Journal	Debit	Credit
1)	Factory overhead	41,600	
	Other accounts		41,600
2)	Work in process inventory ($150,400 DL x 55%)	82,720	
	Factory overhead		82,720

Exercise 2-11 page 71

In December 2016, Shire Computer's management establishes the 2017 predetermined overhead rate based on direct labor cost. The information used in setting this rate includes estimates that the company will incur $747,500 of overhead costs and $575,000 of direct labor cost in year 2017. During March 2017, Shire began and completed Job No. 13-56.

1) What is the predetermined overhead rate for 2017?

Overhead costs	$747,500	130%
Direct labor costs	$575,000	

2) Use the information on the following job cost sheet to determine the total cost of Job 13-56.

JOB COST SHEET

Customer's Name Keiser Co. Job No. 13-56
Job Description 5 plasma monitors - 61 inch

	Direct Materials		Direct Labor		OH Costs Applied	
Date	Req. No.	Amount	Time-Ticket	Amount	Rate	Amount
Mar. 8	4-129	$5,000	T-306	$700		
Mar. 11	4-142	7,020	T-307	1,250		
Mar. 18	4-167	3,330	T-308	1,250		
		$15,350		$3,200	130%	$4,160

Direct Materials	$15,350
Direct Labor	3,200
OH Costs Applied	4,160
Total cost of Job 13-56	$22,710

In December 2016, Shire Computer's management establishes the 2017 predetermined overhead rate based on direct labor cost. The information used in setting this rate includes estimates that the company will incur $734,400 of overhead costs and $510,000 of direct labor cost in year 2017. During March 2017, Shire began and completed Job No. 13-56.

1) What is the predetermined overhead rate for 2017?

Estimated Overhead costs	$734,400	144%
Estmated Direct labor costs	$510,000	

2) Use the information on the following job cost sheet to determine the total cost of the job.

JOB COST SHEET

Customer's Name Keiser Co. Job No. 13-56
Job Description 5 plasma monitors - 61 inch

	Direct Materials		Direct Labor		OH Costs Applied	
Date	Req. No.	Amount	Time-Ticket No.	Amount	Rate	Amount
Mar. 8	4-129	$5,000	T-306	$600		
Mar. 11	4-142	6,750	T-307	8,100		
Mar. 18	4-167	3,000	T-308	3,600		
		$14,750		$12,300	144%	$17,712

Direct Materials	$14,750
Direct Labor	12,300
OH Costs Applied	17,712
Total cost of Job 13-56	$44,762

Exercise 2-12 page 71

Lorenzo Company uses a job order cost accounting system that charges overhead to jobs on the basis of direct material cost. At year-end, the Work in Process Inventory account shows the following.

Date	Explanation	Debit	Credit	Balance
Dec. 31	Direct materials cost	1,500,000		1,500,000
31	Direct labor cost	300,000		1,800,000
31	Overhead costs	600,000		2,400,000
31	To finished goods		2,350,000	50,000

1) Determine the overhead rate used (based on direct material cost).

Overhead costs	$600,000	40% of Direct material costs
Direct material costs	$1,500,000	

2) Only one job remained in the work in process inventory at December 31, 2017. Its direct materials cost is $30,000. How much direct labor cost and overhead cost are assigned to it?

Direct Materials + Direct Labor + OH Applied = $50,000
DM + DL + 40% DM = $50,000
$30,000 + DL + (40% x $30,000) = $50,000
$30,000 + DL + $12,000 = $50,000
DL = $8,000

Direct Materials	$30,000
Direct Labor	8,000
Applied OH (40% of $30,000)	12,000
Total cost of job	$50,000

Lorenzo Company uses a job order cost accounting system that charges overhead to jobs on the basis of direct material cost. At year-end, the Work in Process Inventory account shows the following.

	Explanation	Debit	Credit	Balance
Dec. 31	Direct materials cost	1,300,000		1,300,000
31	Direct labor cost	260,000		1,560,000
31	Overhead costs	650,000		2,210,000
31	To finished goods		2,145,000	65,000

1) Determine the overhead rate used (based on direct material cost).

Overhead costs	$650,000	50% of Direct material costs
Direct material costs	$1,300,000	

2) Only one job remained in the work in process inventory at December 31, 2017. Its direct materials cost is $30,000. How much direct labor cost and overhead cost are assigned to it?

Direct Materials + Direct Labor + OH Applied = $65,000
DM + DL + 50% DM = $65,000
$30,000 + DL + (50% x $30,000) = $65,000
$30,000 + DL + $15,000 = $65,000
DL = $20,000

Direct Materials	$30,000
Direct Labor	20,000
Applied OH (50% of $30,000)	15,000
	$65,000

Exercise 2-13 page 71

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Prepare the journal entry to close overapplied or underapplied overhead to Cost of Goods Sold.

Inventories	April 30	May 31
Raw materials	$43,000	$52,000
Work in process	10,200	21,300
Finished goods	63,000	35,600
Activities and information for May:		
Raw materials purchases (paid with cash)		210,000
Factory payroll (paid with cash)		345,000
Factory overhead		
Indirect materials		15,000
Indirect labor		80,000
Other overhead costs		120,000
Sales (received in cash)		1,400,000
Predetermined overhead rate based on direct labor cost		70%

Factory Overhead		
Ind. Mtls.	15,000	
Ind. Labor	80,000	
Other OH	120,000	
		185,500 OH applied
Underapplied OH	29,500	

Total Factory payroll $345,000
Indirect labor 80,000
Direct labor $265,000

$265,000 x 70% = $185,500 OH Applied

General Journal	Debit	Credit
Cost of Goods Sold	29,500	
Factory Overhead		29,500

The following information is available for Lock-Tite Company, which produces special-order security products and uses a job order cost accounting system.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on direct labor cost		55%

Prepare the journal entry to close overapplied or underapplied overhead to Cost of Goods Sold.

Inventories	April 30	May 31
Raw materials	$47,000	$38,000
Work in process	10,800	21,600
Finished goods	56,000	34,200
Activities and information for May:		
Raw materials purchases (paid with cash)		197,000
Factory payroll (paid with cash)		177,000
Factory overhead		
Indirect materials		29,600
Indirect labor		26,600
Other overhead costs		41,600
Sales (received in cash)		930,000
Predetermined overhead rate based on DL cost		55%

Factory Overhead		
Ind. Mtls.	29,600	
Ind. Labor	26,600	
Other OH	41,600	
		82,720 OH applied
Underapplied OH	15,080	

Total Factory payroll $177,000
Indirect labor 26,600
Direct labor $150,400

$150,400 x 55% = $82,720 OH applied

General Journal	Debit	Credit
Cost of Goods Sold	15,080	
Factory Overhead		15,080

Exercise 2-14 page 71

	Storm Concert Promotions	Valle Home Builders
Actual indirect materials costs	$22,000	$12,500
Actual indirect labor costs	46,000	46,500
Other overhead costs	17,000	47,000
Overhead applied	88,200	105,200

Record the journal entry to close over- or underapplied factory overhead to Cost of Goods Sold for each of the two companies.

Factory Overhead			
Actual Ind. Mtls.	22,000		
Actual Ind. Lbr.	46,000		
Other OH costs	17,000		
		OH applied	88,200
		Overapplied OH	3,200

General Journal	Debit	Credit
Factory Overhead	3,200	
Cost of Goods Sold		3,200

	Storm Concert Promotions	Valle Home Builders
Actual indirect materials costs	$22,000	$12,500
Actual indirect labor costs	46,000	46,500
Other overhead costs	17,000	47,000
Overhead applied	88,200	105,200

Record the journal entry to close over- or underapplied factory overhead to Cost of Goods Sold for each of the two companies.

Factory Overhead			
Actual Ind. Mtls.	12,500		
Actual Ind. Lbr.	46,500		
Other OH costs	47,000		
		OH applied	105,200
Underapplied OH	800		

General Journal	Debit	Credit
Cost of Goods Sold	800	
Factory Overhead		800

	Storm Concert Promotions	Valle Home Builders
Actual indirect materials costs	$11,600	$7,300
Actual indirect labor costs	55,400	45,600
Other overhead costs	17,000	49,900
Overhead applied	91,200	97,500

Record the journal entry to close over- or underapplied factory overhead to Cost of Goods Sold for each of the two companies.

Factory Overhead			
Actual Ind. Mtls.	11,600		
Actual Ind. Lbr.	55,400		
Other OH costs	17,000		
		OH applied	91,200
		Overapplied OH	7,200
OH incurred	84,000		

General Journal	Debit	Credit
Factory Overhead	7,200	
Cost of Goods Sold		7,200

	Storm Concert Promotions	Valle Home Builders
Actual indirect materials costs	$11,600	$7,300
Actual indirect labor costs	55,400	45,600
Other overhead costs	17,000	49,900
Overhead applied	91,200	97,500

Record the journal entry to close over- or underapplied factory overhead to Cost of Goods Sold for each of the two companies.

Factory Overhead			
Actual Ind. Mtls.	7,300		
Actual Inc. Lbr.	45,600		
Other OH costs	49,900		
		OH applied	97,500
Underapplied OH	5,300		

OH incurred 102,800

General Journal	Debit	Credit
Cost of Goods Sold	5,300	
Factory Overhead		5,300

Exercise 2-15 page 72

In December 2016, Custom Mfg. established its predetermined overhead rate for jobs produced during year 2017 by using the following cost predictions: overhead costs, $750,000, and direct material costs, $625,000. At year end 2017, the company's records show that actual overhead costs for the year are $830,000. Actual direct material cost had been assigned to jobs as follows.

Jobs completed and sold	$513,750
Jobs in finished goods inventory	102,750
Jobs in work in process	68,500
Total actual direct material cost	$685,000

Determine the overhead rate used (based on direct material cost).

Estimated Overhead Costs	$750,000	120% of Direct Material cost
Estimated Direct Material Cost	$625,000	

Set up the Factory overhead T-account and enter the overhead costs incurred and the amounts applied to jobs during the year using the predetermined overhead rate. Determine whether overhead is overapplied or underapplied (and the amount) during the year.

Factory Overhead				
Actual OH Incurred	830,000			
		OH Applied	822,000	($685,000 x 120%)
Underapplied OH	8,000			

Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

General Journal	Debit	Credit
Cost of Goods Sold	8,000	
Factory Overhead		8,000

In December 2016, Custom Mfg. established its predetermined overhead rate for jobs produced during year 2017 by using the following cost predictions: overhead costs, $1,240,000, and direct material costs, $400,000. At year end 2017, the company's records show that actual overhead costs for the year are $1,640,000. Actual direct material cost had been assigned to jobs as follows.

Jobs completed and sold	$400,000	
Jobs in finished goods inventory	78,000	
Jobs in work in process	42,000	
Total actual direct material cost	$520,000	x 310% = $1,612,000 applied

The predetermined overhead rate is based on estimated costs and activities.

Estimated Overhead Costs	$1,240,000	310% of Direct Material cost
Estimated Direct Material Cost	$400,000	

Set up the Factory overhead T-account and enter the overhead costs incurred and the amounts applied to jobs during the year using the predetermined overhead rate. Determine whether overhead is overapplied or underapplied (and the amount) during the year.

Factory Overhead			
Actual OH	1,640,000	OH Applied	1,612,000
Underapplied OH	28,000		

In December 2016, Custom Mfg. established its predetermined overhead rate for jobs produced during year 2017 by using the following cost predictions: overhead costs, $1,240,000, and direct material costs, $400,000. At year end 2017, the company's records show that actual overhead costs for the year are $1,640,000. Actual direct material cost had been assigned to jobs as follows.

Jobs completed and sold	$400,000	
Jobs in finished goods inventory	78,000	
Jobs in work in process	42,000	
Total actual direct material cost	$520,000	x 310% = $1,612,000 applied

Estimated Overhead Costs	$1,240,000	310% of Direct Material cost
Estimated Direct Material Cost	$400,000	

Factory Overhead			
Actual OH	1,640,000		
		OH Applied	1,612,000
Underapplied OH	28,000		

Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

General Journal	Debit	Credit
Cost of Goods Sold	28,000	
Factory Overhead		28,000

Exercise 2-16 page 72

In December 2016, Infodeo established its predetermined overhead rate for movies produced during year 2017 by using the following cost predictions: overhead costs, $1,680,000, and direct labor costs, $480,000. At year end 2017, the company's records show that actual overhead costs for the year are $1,652,000. Actual direct labor cost had been assigned to jobs as follows.

Movies completed and released	$400,000
Movies still in production	50,000
Total actual direct labor cost	$475,000

Determine the overhead rate used (based on direct labor cost).

Budgeted Overhead Costs	$1,680,000	350% of Direct Labor cost
Budgeted Direct Labor Cost	$480,000	

Set up a T-account for Factory overhead. Enter the overhead costs incurred and the amounts applied to movies during the year using the predetermined overhead rate and determine whether overhead is overapplied or underapplied (and the amount) during the year.

Factory Overhead				
Actual OH	1,652,000			
		OH Applied	1,662,500	($475,000 x 350%)
		Overapplied OH	10,500	

Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

General Journal	Debit	Credit
Factory Overhead	10,500	
Cost of Goods Sold		10,500

In December 2016, Infodeo established its predetermined overhead rate for movies produced during year 2017 by using the following cost predictions: overhead costs, $2,592,000, and direct labor costs, $480,000. At year end 2017, the company's records show that actual overhead costs for the year are $3,560,000. Actual direct labor cost had been assigned to jobs as follows.

Movies completed and released	$600,000
Movies still in production	72,000
Total actual direct labor cost	$672,000

The predetermined overhead rate is based on budgeted costs and activities.

Budgeted Overhead Costs	$2,592,000	540% of Direct Labor cost
Budgeted Direct Labor Cost	$480,000	

Set up a T-account for Factory overhead. Enter the overhead costs incurred and the amounts applied to movies during the year using the predetermined overhead rate and determine whether overhead is overapplied or underapplied (and the amount) during the year.

Factory Overhead				
Actual OH	3,560,000	OH Applied	3,628,800	= $672,000 Direct Labor x 540%
		Overapplied OH	68,800	

In December 2016, Infodeo established its predetermined overhead rate for movies produced during year 2017 by using the following cost predictions: overhead costs, $2,592,000, and direct labor costs, $480,000. At year end 2017, the company's records show that actual overhead costs for the year are $3,560,000. Actual direct labor cost had been assigned to jobs as follows.

Movies completed and released	$600,000
Movies still in production	72,000
Total actual direct labor cost	$672,000

Budgeted Overhead Costs	$2,592,000	540% of Direct Labor cost
Budgeted Direct Labor Cost	$480,000	

Factory Overhead			
Actual OH	3,560,000	OH Applied	3,628,800 = $672,000 Direct Labor x 540%
		Overapplied OH	68,800

Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

General Journal	Debit	Credit
Factory Overhead	68,800	
Cost of Goods Sold		68,800

Exercise 2-17 page 72

Moonrise Bakery applies factory overhead based on direct labor costs. The company incurred the following costs during 2017: direct materials costs, $650,000; direct labor costs, $3,000,000; and factory overhead costs applied, $1,800,000.

1. Determine the company's predetermined overhead rate for 2017.
2. Assuming that the company's $71,000 ending Work in Process Inventory account for 2017 had $20,000 of direct labor costs, determine the inventory's direct materials costs.
3. Assuming that the company's $490,000 ending Finished Goods Inventory account for 2017 had $250,000 of direct materials costs, determine the inventory's direct labor costs and its overhead costs.

Work in Process Inventory			
DM Used	650,000		
DL Used	3,000,000		
Fact OH	1,800,000		
Total	5,450,000		
		CofGM	5,379,000
End WIP	71,000		

DL + OH applied = $240,000
DL + .6 DL = $240,000
1.6DL = $240,000
DL = $150,000

Applied Overhead	$1,800,000
Direct Labor Used	$3,000,000

= 60% of Direct Labor Cost

Direct Materials	$39,000
Direct Labor	20,000
OH Applied	$20,000 x .6 = 12,000
Ending WIP	$71,000

Direct Materials	$250,000
Direct Labor	$240,000 / 1.6 = 150,000
OH Applied	$150,000 x .6 = 90,000
Ending FG	$490,000

Moonrise Bakery applies factory overhead based on direct labor costs. The company incurred the following costs during 2017: direct materials costs, $700,000; direct labor costs, $2,000,000; and factory overhead costs applied, $1,400,000.

1. Determine the company's predetermined overhead rate for 2017.
2. Assuming that the company's $100,000 ending Work in Process Inventory account for 2017 had $40,000 of direct labor costs, determine the inventory's direct materials costs.
3. Assuming that the company's $500,000 ending Finished Goods Inventory account for 2017 had $140,000 of direct materials costs, determine the inventory's direct labor costs and its overhead costs.

Work in Process Inventory			
DM Used	700,000		
DL Used	2,000,000		
Fact OH	1,400,000		
Total	4,100,000		
		CofGM	4,000,000
End WIP	100,000		

DL + OH applied = $340,000
DL + .7 DL = $340,000
1.7DL = $340,000
DL = $200,000

Applied Overhead	$1,400,000
Direct Labor Used	$2,000,000

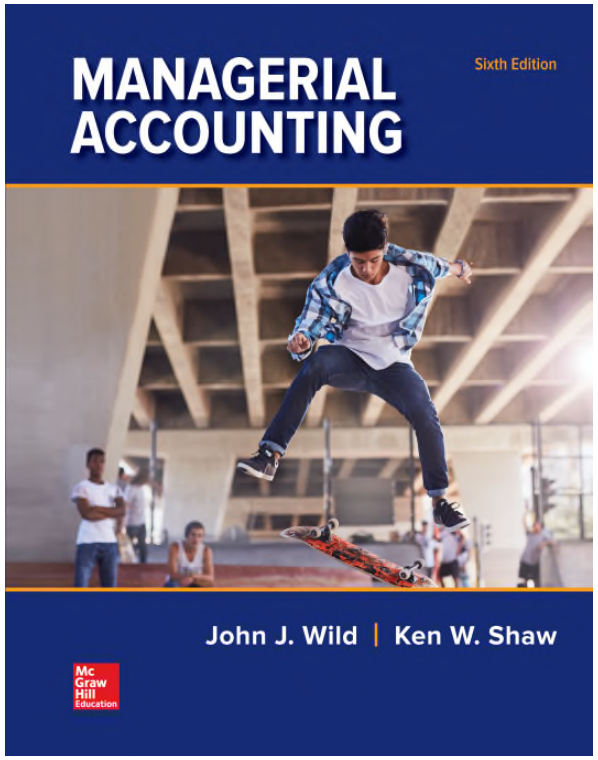
= 70% of Direct Labor Cost

Direct Materials	$32,000
Direct Labor	40,000
OH Applied	$40,000 x .7 = 28,000
Ending WIP	$100,000

Direct Materials	$160,000
Direct Labor	$340,000 / 1.7 = 200,000
OH Applied	$200,000 x .7 = 140,000
Ending FG	$500,000

Job Order Costing and Analysis

Chapter 2



Wild, Shaw, and Chiappetta

Managerial Accounting

6th Edition

Chapter 2 Learning Objectives

CONCEPTUAL

C1 Describe important features of job order production.

C2 Explain job cost sheets and how they are used in job order costing.

ANALYTICAL

A1 Apply job order costing in pricing services.

PROCEDURAL

P1 Describe and record the flow of materials costs in job order costing.

P2 Describe and record the flow of labor costs in job order costing.

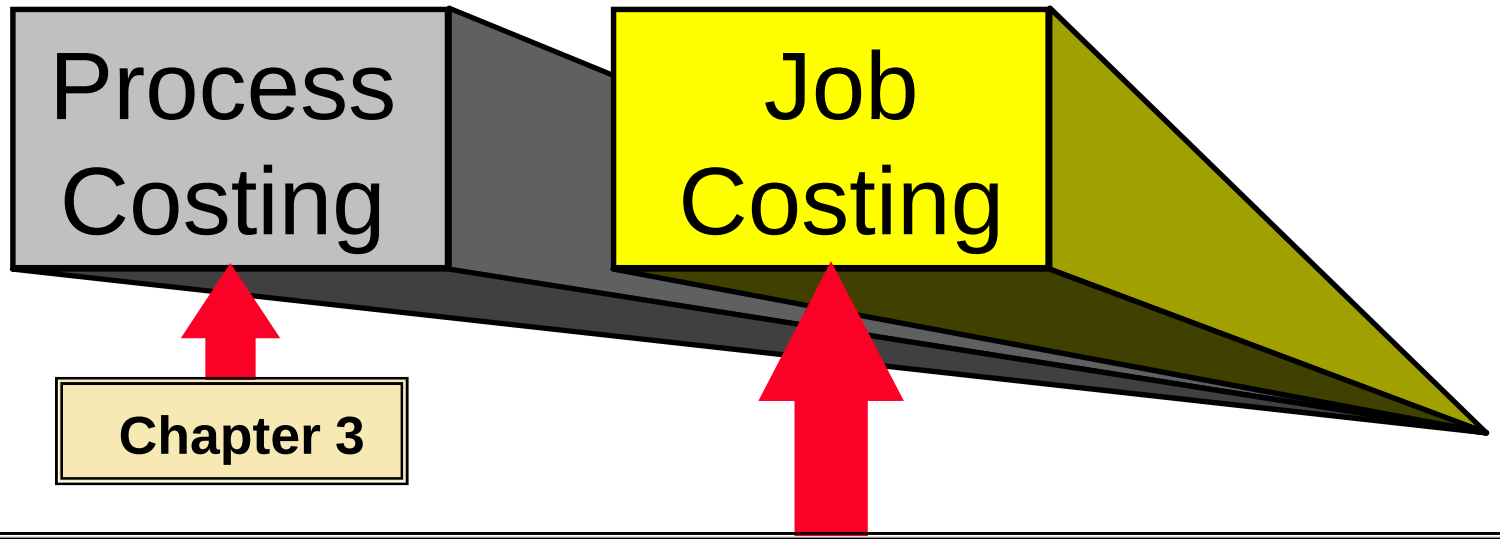
P3 Describe and record the flow of overhead costs in job order costing.

P4 Determine adjustments for overapplied and underapplied factory overhead.

Learning Objective

C1:
Describe important features of job order production.

Cost Accounting Systems



- **Used for production of large, unique, or high-cost items.**
- **Built to order rather than mass produced.**
- **Many costs can be directly traced to each job.**

Learning Objective C1: Describe important features of job order production.

Job Order Production

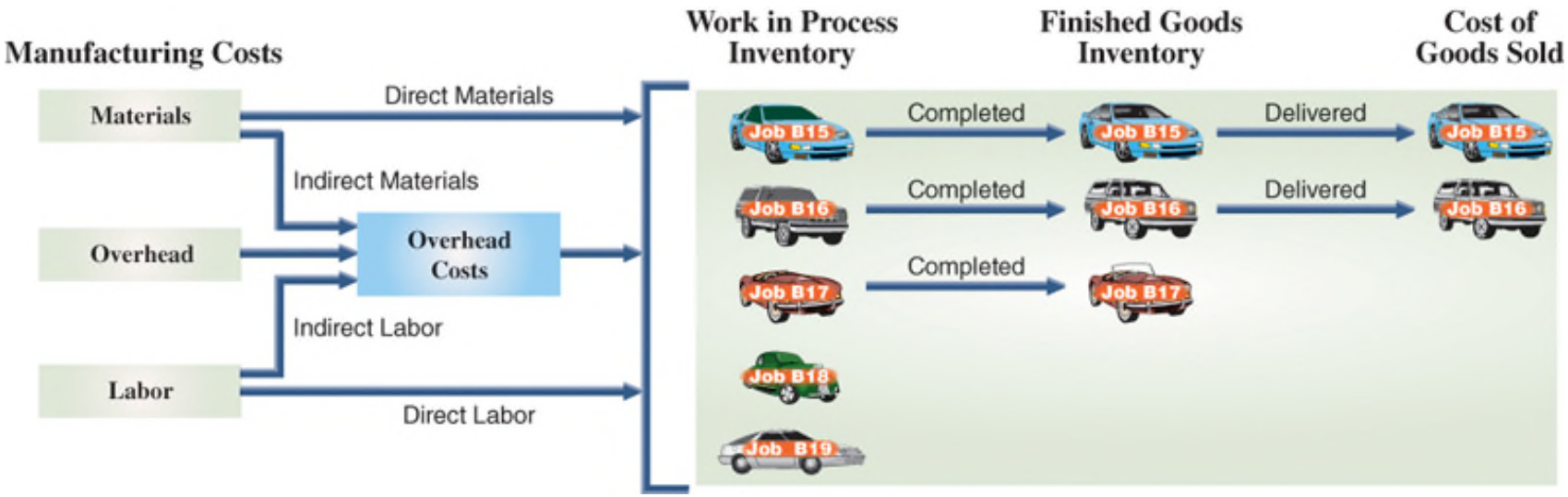
Exhibit 2.1

Job Order Operations		Process Operations	
• Custom orders • Heterogeneous products and services • Low production volume • High product flexibility • Low to medium standardization		• Repetitive procedures • Homogeneous products and services • High production volume • Low product flexibility • High standardization	

Learning Objective C1: Describe important features of job order production.

Production Activities in Job Order Costing

Exhibit 2.2



Learning Objective C1: Describe important features of job order production.

Cost Flows

Manufacturing costs flow:

1. Raw materials – direct and indirect materials
2. Work in process – job is being produced
3. Finished goods – completed goods
4. Cost of goods sold – goods which are sold

Subsidiary records store information about the manufacturing costs for each individual job.

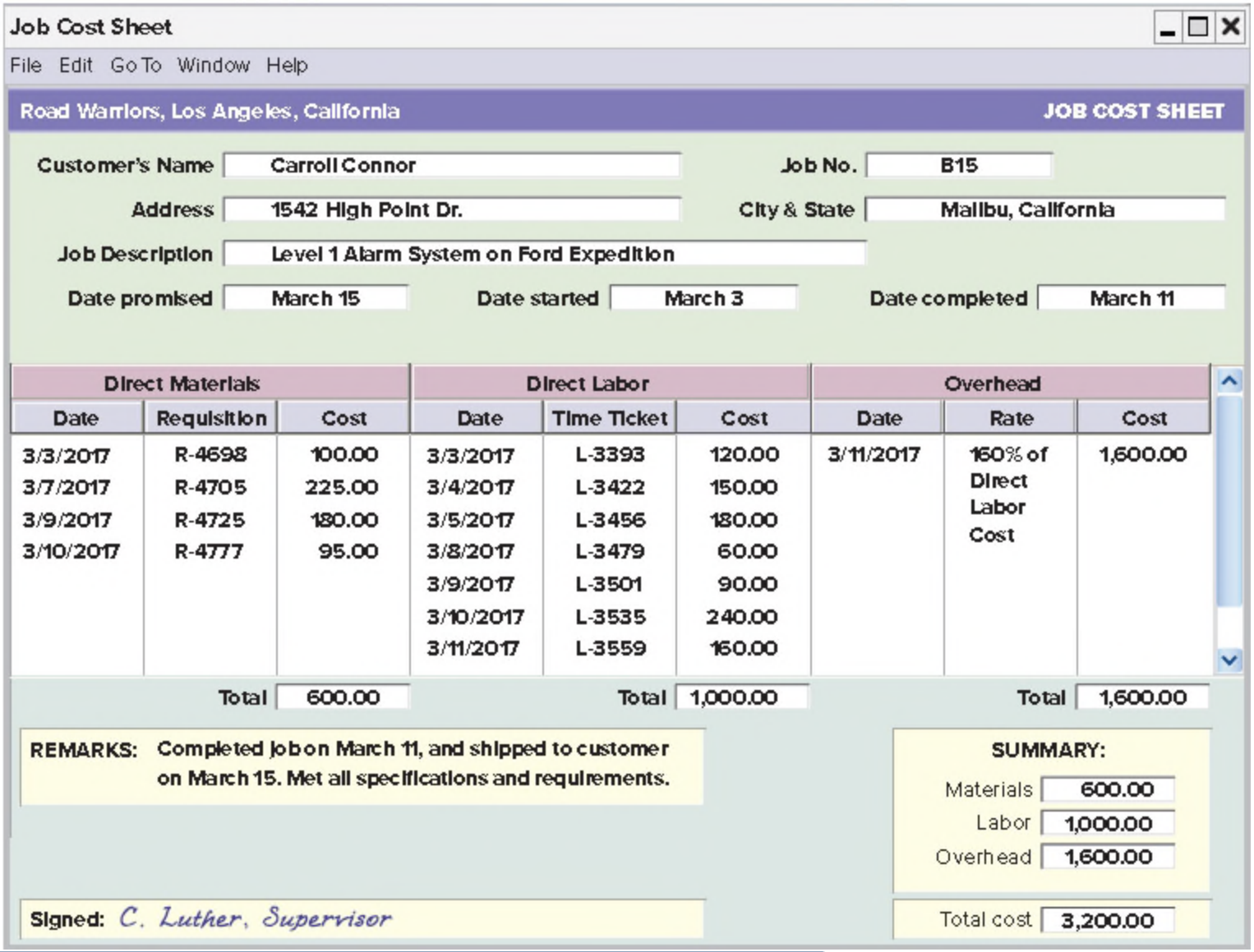
Learning Objective C1: Describe important features of job order production.

Learning Objective

C2:
Explain job cost sheets and how they are used in job order costing.

Job Cost Sheet

Exhibit 2.3



Job Cost Sheet

File Edit Go To Window Help

Road Warriors, Los Angeles, California — **JOB COST SHEET**

Customer's Name	Carroll Connor	Job No.	B15
Address	1542 High Point Dr.	City & State	Malibu, California
Job Description	Level 1 Alarm System on Ford Expedition		
Date promised	March 15	Date started	March 3
		Date completed	March 11

Direct Materials			Direct Labor			Overhead		
Date	Requisition	Cost	Date	Time Ticket	Cost	Date	Rate	Cost
3/3/2017	R-4698	100.00	3/3/2017	L-3393	120.00	3/11/2017	160% of Direct Labor Cost	1,600.00
3/7/2017	R-4705	225.00	3/4/2017	L-3422	150.00			
3/9/2017	R-4725	180.00	3/5/2017	L-3456	180.00			
3/10/2017	R-4777	95.00	3/8/2017	L-3479	60.00			
			3/9/2017	L-3501	90.00			
			3/10/2017	L-3535	240.00			
			3/11/2017	L-3559	160.00			
	Total	600.00		Total	1,000.00		Total	1,600.00

REMARKS: Completed job on March 11, and shipped to customer on March 15. Met all specifications and requirements.

SUMMARY:

Materials	600.00
Labor	1,000.00
Overhead	1,600.00
Total cost	3,200.00

Signed: *C. Luther, Supervisor*

Learning Objective C2: Explain job cost sheets and how they are used in job order costing.

NEED-TO-KNOW 2-1

A manufacturer's job cost sheet reports direct materials of $1,200 and direct labor of $250 for printing 200 T-shirts for a bikers' reunion. Estimated overhead is computed as 140% of direct labor costs.

Work in Process Inventory		
DM used	1,200	
DL Used	250	
Fact OH	350	
Total	1,800	

1. What is the estimated overhead cost for this job? $250 Direct labor x 140% = $350
2. What is the total cost per T-shirt for this job? $1,800 total cost of job / 200 T-shirts = $9 per shirt
3. What journal entry does the manufacturer make upon completion of this job to transfer costs from work in process to finished goods?

	General Journal	Debit	Credit
	Finished Goods Inventory	1,800	
	Work in Process Inventory		1,800

Learning Objective P1: Describe and record the flow of materials costs in job order costing.

Learning Objective

P1:

Describe and record the flow of materials costs in job order costing.

Materials and Labor Cost Flows

- Materials received recorded in a receiving report
- Receiving report – materials source document
- Materials ledger cards –updated when materials are purchased and issued for use in production.

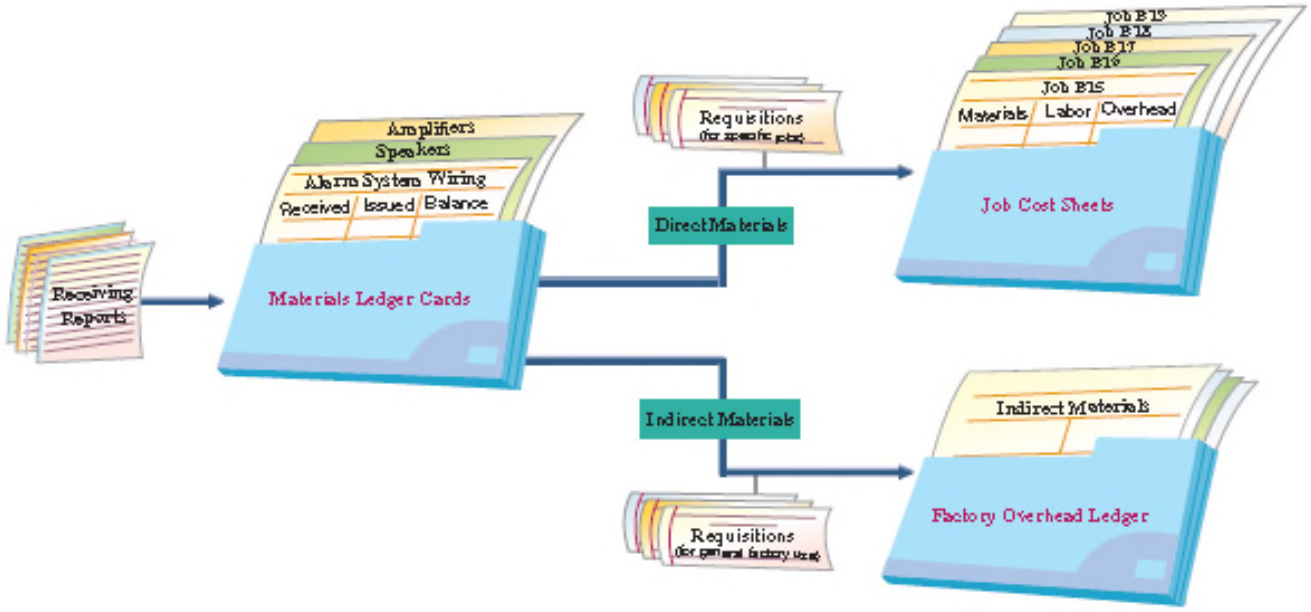


Exhibit 2.4

Learning Objective C1: Describe important features of job order production.

Materials Ledger Card

Exhibit 2.5

MATERIALS LEDGER CARD

Road Warriors
Los Angeles, California

Item	Alarm system wiring	Stock No.	M–347	Location in Storeroom	Bin 137
Maximum quantity	5 units	Minimum quantity	1 unit	Quantity to reorder	2 units

	Received				Issued				Balance		
Date	Receiving Report Number	Units	Unit Price	Total Price	Requi-sition Number	Units	Unit Price	Total Price	Units	Unit Price	Total Price
									1	225.00	225.00
3/4/2017	C-7117	2	225.00	450.00					3	225.00	675.00
3/7/2017					R–4705	1	225.00	225.00	2	225.00	450.00

Learning Objective P1: Describe and record the flow of materials costs in job order costing.

Materials Requisition

Exhibit 2.6

Road Warriors
Los Angeles, California

MATERIALS REQUISITION No. R–4705

Job No.	B15	Date	3/7/2017
Material Stock No.	M–347	Material Description	Alarm system wiring
Quantity Requested	1	Requested By	C. Luther
Quantity Provided	1	Date Provided	3/7/2017
Filled By	M. Bateman	Material Received By	C. Luther
Remarks			

Learning Objective P1: Describe and record the flow of materials costs in job order costing.

Materials Requisition

Direct materials—requisitioned for specific jobs	
Job B15	$ 600
Job B16	300
Job B17	500
Job B18	150
Job B19	250
Total direct materials	**$1,800**
Indirect materials—requisitioned for general factory use	550
Total	$ 2,350

Mar. 7	Work in Process Inventory	1,800	
	Raw Materials Inventory		1,800
	To record use of direct materials.		

Learning Objective P1: Describe and record the flow of materials costs in job order costing.

NEED-TO-KNOW 2-2

A manufacturing company purchased $1,200 of materials (on account) for use in production. The company used $200 of direct materials on Job 1 and $350 of direct materials on Job 2. Prepare journal entries to record the above transactions.

	General Journal	Debit	Credit
Purchase	Raw Materials Inventory	1,200	
	Accounts Payable		1,200
Use - DM	Work in Process Inventory	550	
	Raw Materials Inventory		550

Raw Materials Inventory

Beg. Inv.	XXX		
Purchases	1,200		
		Direct Material	550

Work in Process Inventory

Beg. Inv.			
Direct Materials	550		
Direct Labor			
Factory OH			

Job 1

Direct Materials	200
Direct Labor	
Factory OH	

Job 2

Direct Materials	350
Direct Labor	
Factory OH	

Learning Objective P1: Describe and record the flow of materials costs in job order costing.

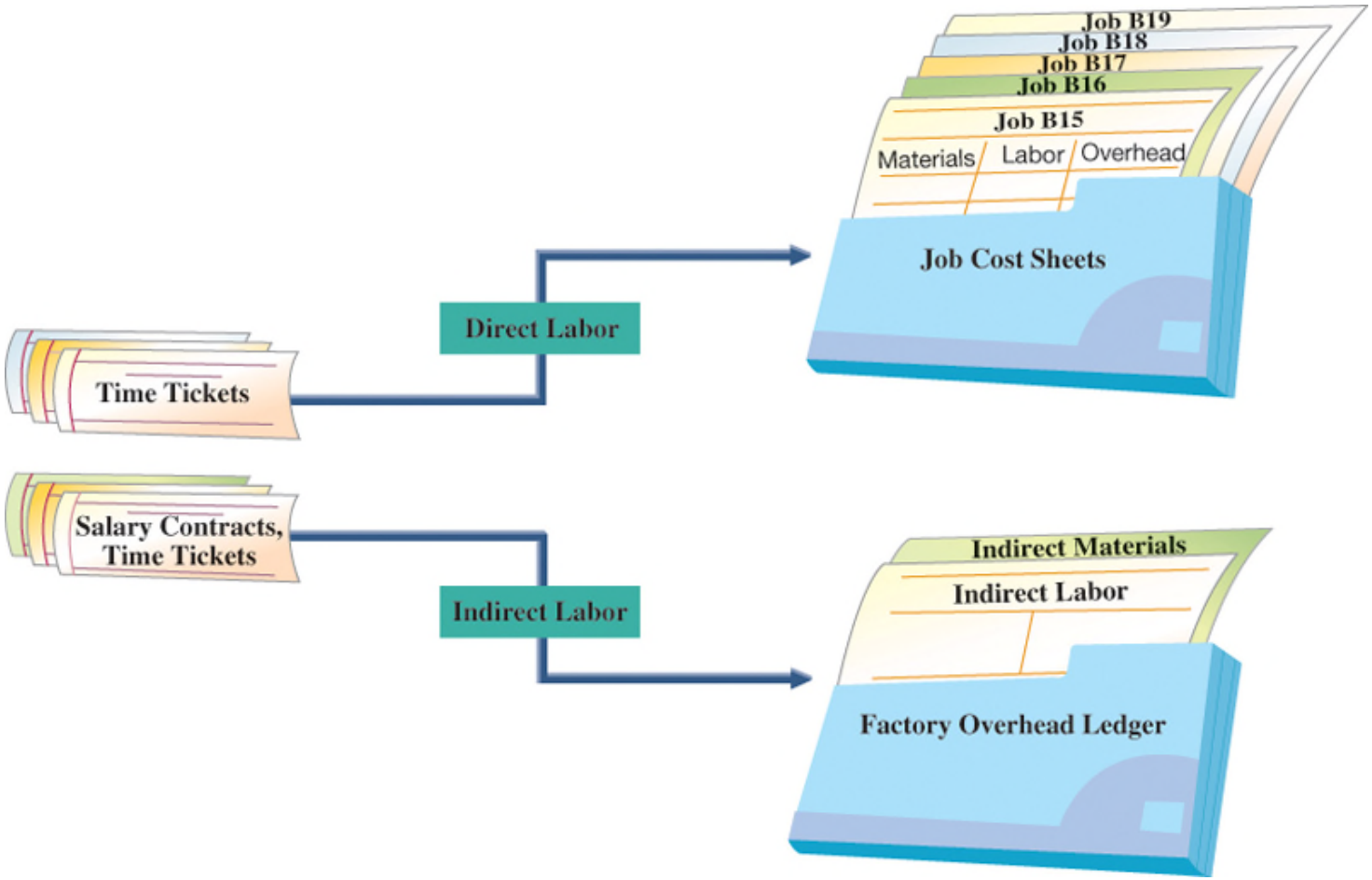
Learning Objective

P2:

Describe and record the flow of labor costs in job order costing.

Labor Cost Flows

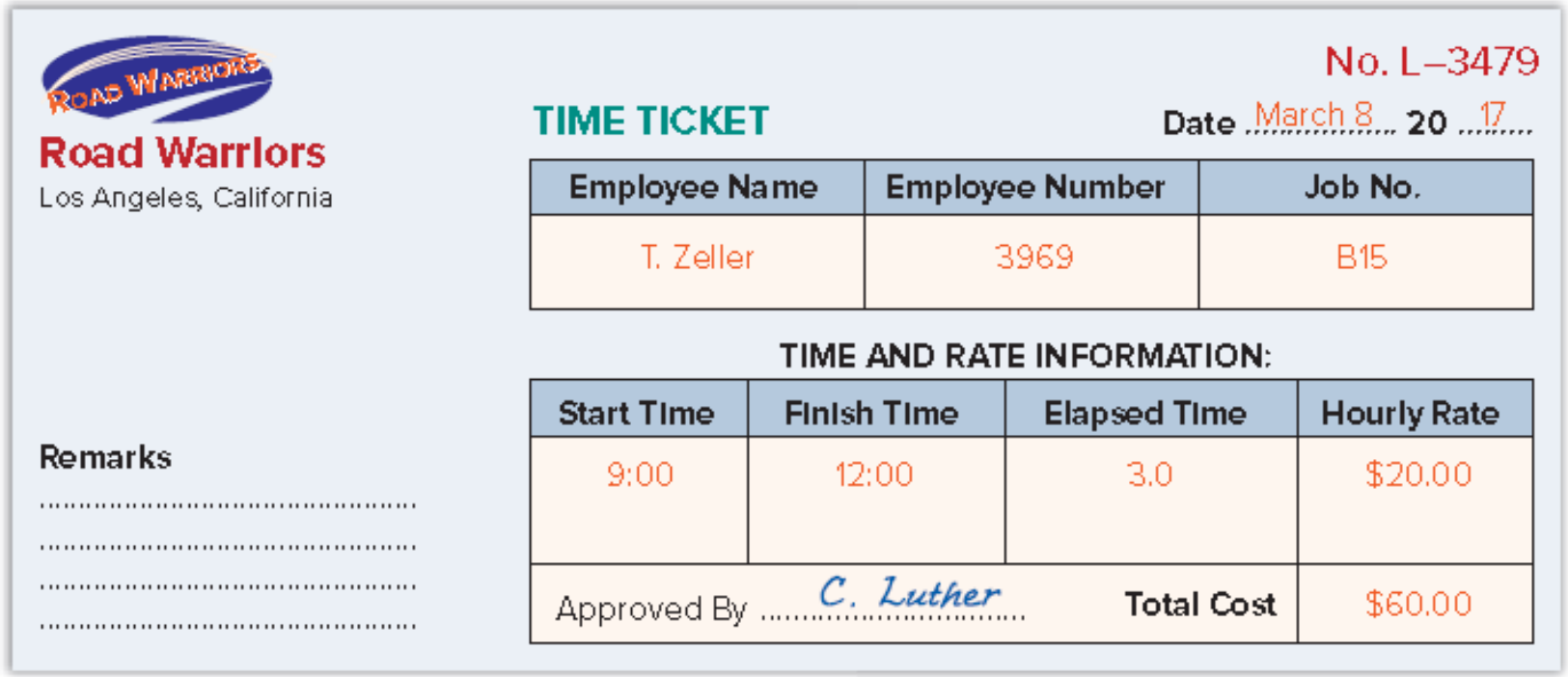
Exhibit 2.8



Learning Objective P2: Describe and record the flow of labor costs in job order costing.

Labor Time Ticket

Exhibit 2.9



Road Warriors
Los Angeles, California

No. L–3479

TIME TICKET

Date March 8, 20 17

Employee Name	Employee Number	Job No.
T. Zeller	3969	B15

TIME AND RATE INFORMATION:

Start Time	Finish Time	Elapsed Time	Hourly Rate
9:00	12:00	3.0	$20.00
Approved By C. Luther		Total Cost	$60.00

Remarks

.....
.....
.....
.....

Learning Objective P2: Describe and record the flow of labor costs in job order costing.

Labor Time Ticket

Direct labor—traceable to specific jobs	
Job B15	$ 1,000
Job B16	800
Job B17	1,100
Job B18	700
Job B19	600
Total direct labor	**$4,200**
Indirect labor	1,100
Total	$ 5,300

Mar. 31	Work in Process Inventory	4,200	
	Factory Wages Payable		4,200

Learning Objective P2: Describe and record the flow of labor costs in job order costing.

NEED-TO-KNOW 2-3

A manufacturing company used $5,400 of direct labor in production activities in May. Of this amount, $3,100 of direct labor was used on Job A1 and $2,300 of direct labor was used on Job A2. Prepare the journal entry to record direct labor used.

	General Journal	Debit	Credit
	Work in Process Inventory	5,400	
	Factory Wages Payable		5,400

Work in Process Inventory	
Beginning Inv.	
Direct Materials	
Direct Labor	5,400
Factory OH	

Factory Wages Payable	
	5,400

Job A1	
Direct Materials	
Direct Labor	3,100
Factory OH	

Job A2	
Direct Materials	
Direct Labor	2,300
Factory OH	

Learning Objective P2: Describe and record the flow of labor costs in job order costing.

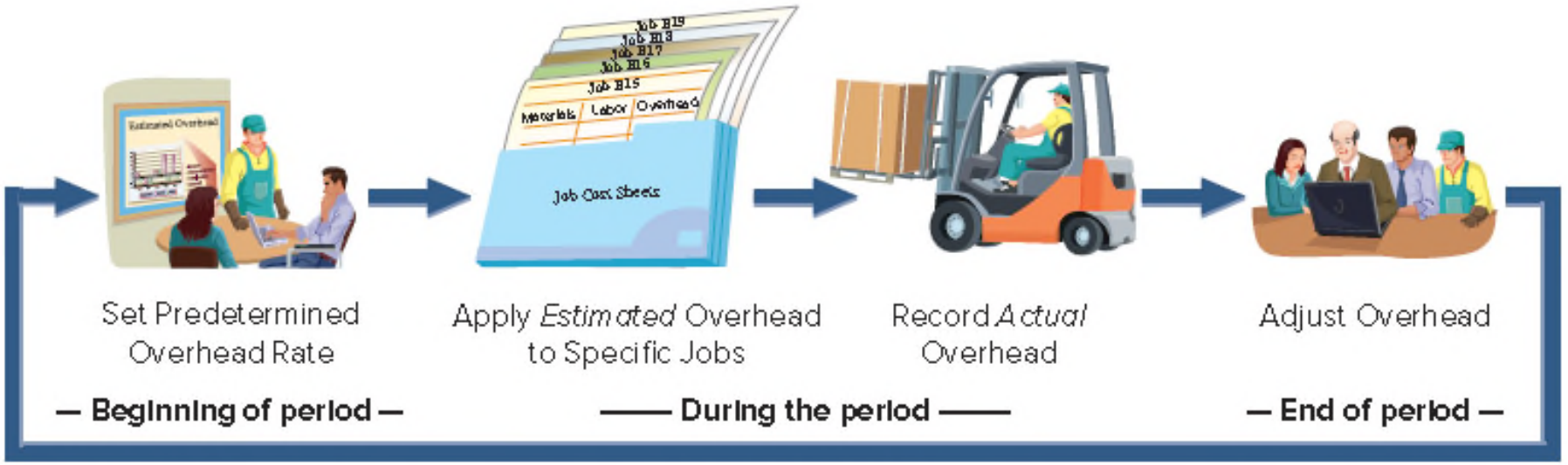
Learning Objective

P3:

Describe and record the flow of overhead costs in job order costing.

Overhead Cost Flows and Reports

Exhibit 2.11



Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Set Predetermined Overhead Rate

Road Warriors uses a predetermined overhead rate (POHR) based on direct labor cost to apply overhead to jobs.

Exhibit 2.12

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

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Predetermined Overhead Rate

Mar. 31	Work in Process Inventory	6,720	
	Factory Overhead		6,720
	To apply overhead at 160% of direct labor.		

Exhibit 2.13

Job	Direct Labor Cost	Predetermined Overhead Rate*	Applied Overhead
B15	$1,000	1.6	$1,600
B16	800	1.6	1,280
B17	1,100	1.6	1,760
B18	700	1.6	1,120
B19	600	1.6	960
Total	$4,200		$6,720

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

NEED-TO-KNOW 2-4

A manufacturing company estimates it will incur $240,000 of overhead costs in the next year. The company allocates overhead using machine hours, and estimates it will use 1,600 machine hours in the next year. During the month of June, the company used 80 machine hours on Job 1 and 70 machine hours on Job 2.

1. Compute the predetermined overhead rate to be used to apply overhead during the year.

$$\textbf{Predetermined Overhead Rate} = \frac{\textbf{Estimated Overhead Costs}}{\textbf{Estimated Activity Base}} = \frac{\$240{,}000}{1{,}600 \text{ machine hours}} = \$150 \text{ per machine hour}$$

2. Determine how much overhead should be applied to Job 1 and to Job 2 for June.

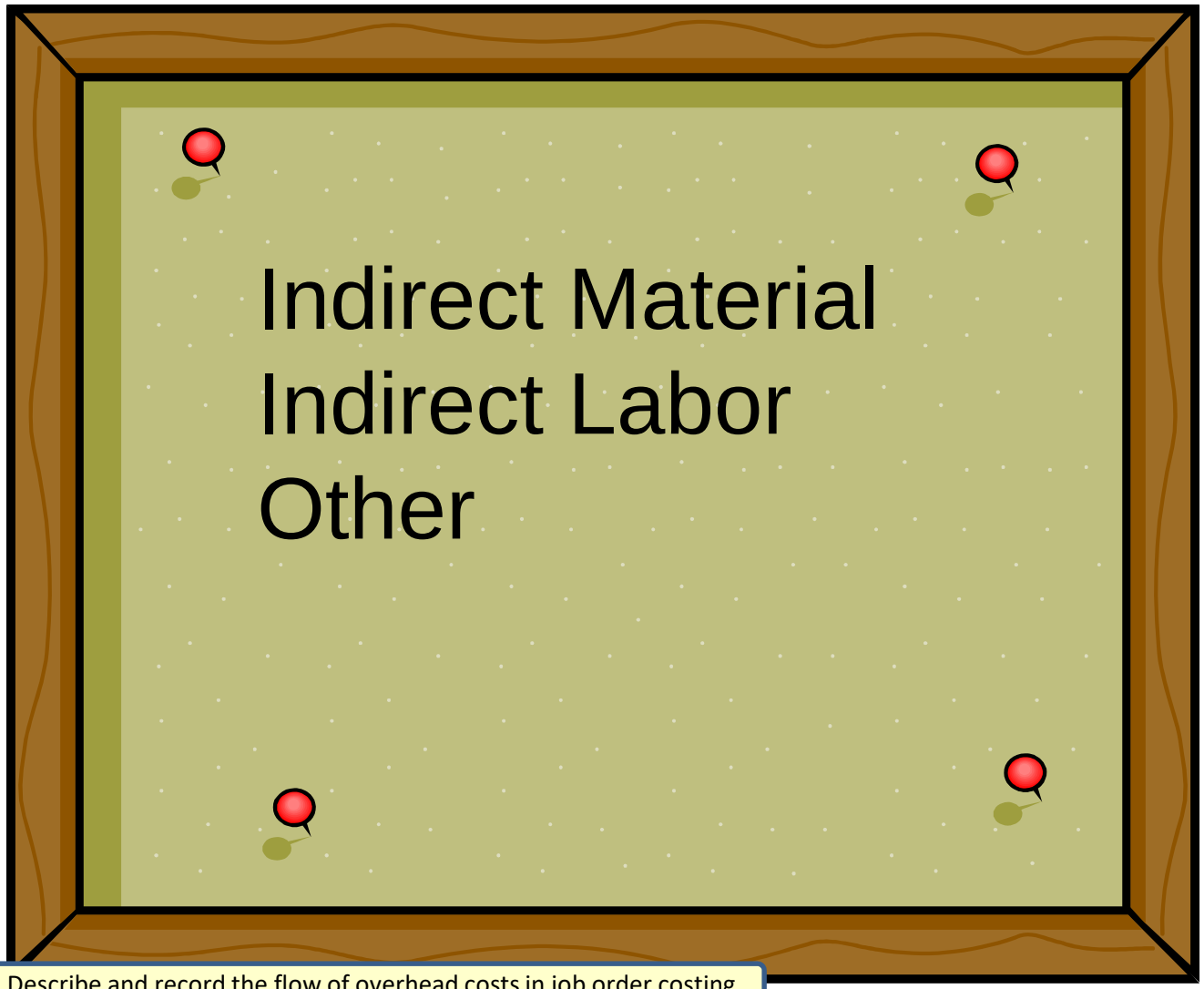
	Machine Hours Used	x Predetermined OH rate	= OH Applied
Job 1	80 hours	x $150 per hour	= $12,000 OH applied
Job 2	70 hours	x $150 per hour	= $10,500 OH applied
Total	150 hours	x $150 per hour	= $22,500 OH applied

3. Prepare the journal entry to record overhead applied for June.

	General Journal	Debit	Credit
	Work in Process Inventory	22,500	
	Factory Overhead		22,500

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Record Actual Overhead



Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Record Indirect Materials Used

Mar. 31	Factory Overhead	550	
	Raw Materials Inventory		550
	To record indirect materials used during the month.		

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Record Indirect Labor Used

Mar. 31	Factory Overhead	1,100	
	Factory Wages Payable		1,100
	To record indirect labor used during the month.		

Record Other Overhead Costs

Mar. 31	Factory Overhead	5,270	
	Accumulated Depreciation—Factory Equipment		2,400
	Rent Payable		1,620
	Utilities Payable		250
	Prepaid Insurance		1,000
	To record actual overhead costs for the month.		

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

NEED-TO-KNOW 2-5

A manufacturing company used $400 of indirect materials and $2,000 of indirect labor during the month. The company also incurred $1,200 of depreciation on factory equipment, $500 of depreciation on office equipment, and $300 of factory utilities. Prepare the necessary journal entries.

	General Journal	Debit	Credit
	Factory Overhead	3,900	
	Raw Materials Inventory		400
	Factory Wages Payable		2,000
	Accumulated Depreciation - Factory Equipment		1,200
	Utilities Payable		300

Factory Overhead

Actual OH Incurred		OH Applied to Production
Ind. Materials	400	
Ind. Labor	2,000	
Fact. Deprec.	1,200	
Fact. Utilities	300	
	3,900	

NEED-TO-KNOW 2-5

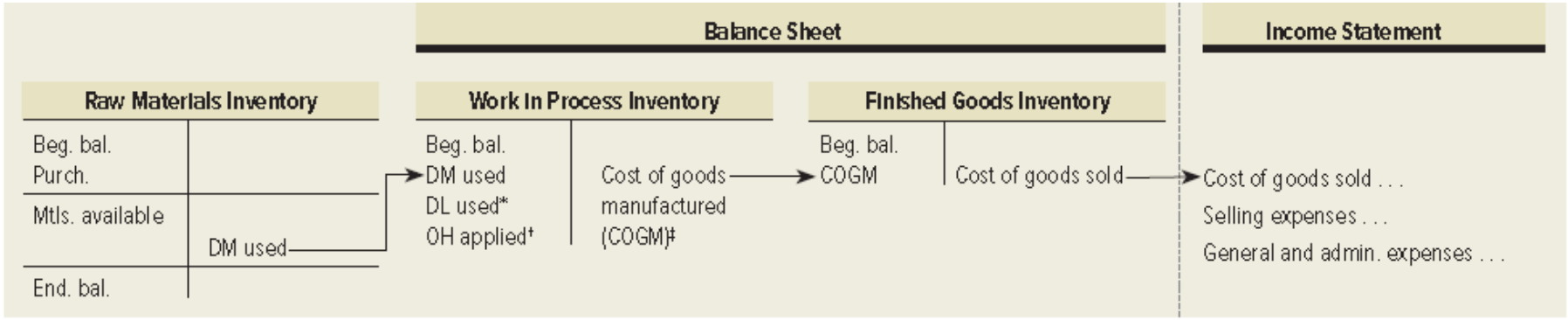
A manufacturing company used $400 of indirect materials and $2,000 of indirect labor during the month. The company also incurred $1,200 of depreciation on factory equipment, $500 of depreciation on office equipment, and $300 of factory utilities. Prepare the necessary journal entries.

	General Journal	Debit	Credit
	Depreciation expense	500	
	Accumulated Depreciation - Office Equipment		500

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Summary of Cost Flows

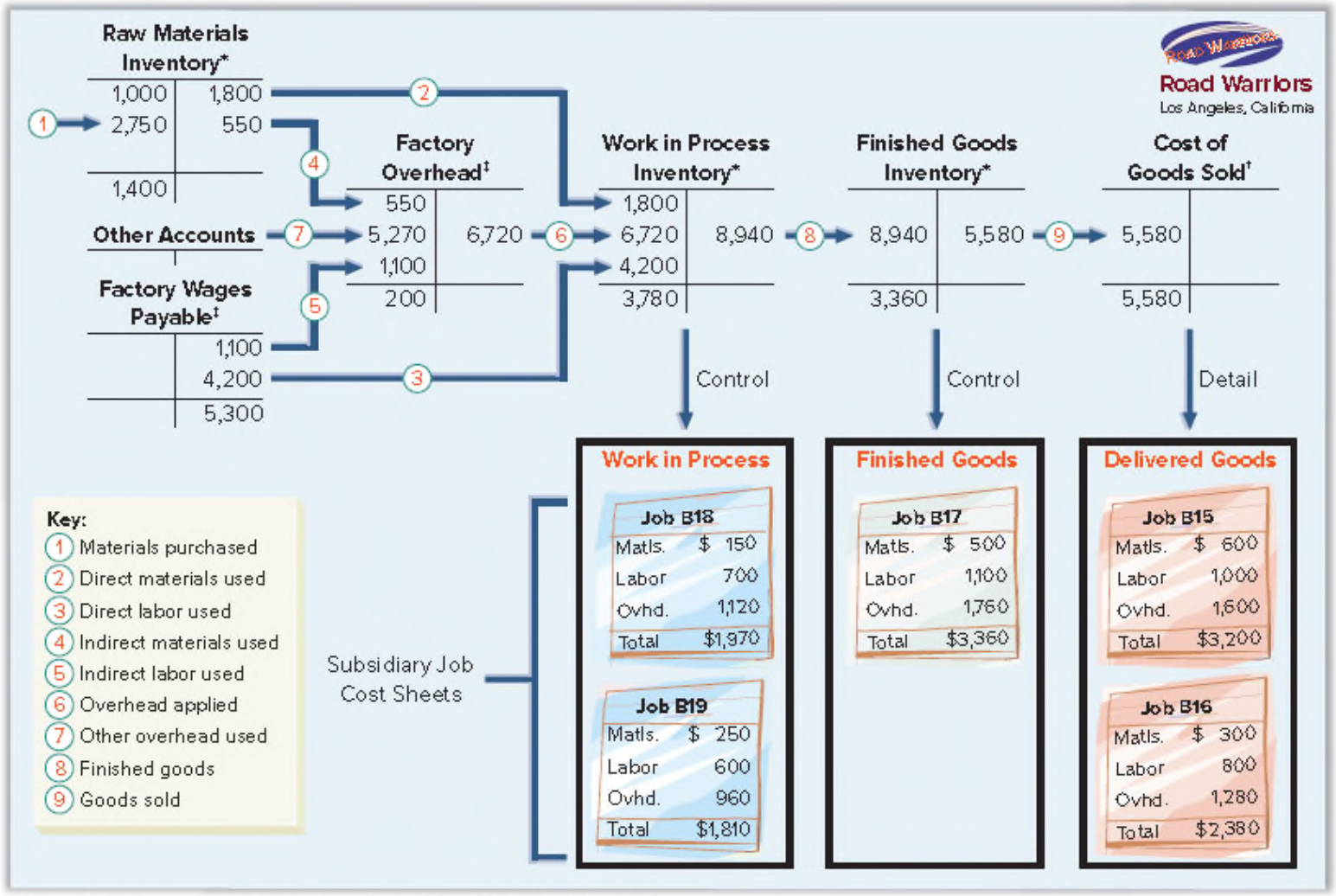
Exhibit 2.15



* From time tickets. † Predetermined overhead rate × Actual amount of activity base used. ‡ Reported on schedule of cost of goods manufactured.

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Summary of Cost Flows



* The ending balances in the inventory accounts are reported on the balance sheet.
† The Cost of Goods Sold balance is reported on the income statement.
‡ Factory Overhead is considered a temporary account; when these costs are applied to jobs, its balance is reduced.

Exhibit 2.16

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Summary of Cost Flows

Exhibit 2.17

①	Raw Materials Inventory	2,750	
	Accounts Payable		2,750
	Acquired raw materials.		
②	Work in Process Inventory	1,800	
	Raw Materials Inventory		1,800
	Assign costs of direct materials used.		
③	Work in Process Inventory	4,200	
	Factory Wages Payable		4,200
	Assign costs of direct labor used.		
④	Factory Overhead	550	
	Raw Materials Inventory		550
	Record use of indirect materials.		
⑤	Factory Overhead	1,100	
	Factory Wages Payable		1,100
	Record indirect labor costs.		
⑥	Work in Process Inventory	6,720	
	Factory Overhead		6,720
	Apply overhead at 160% of direct labor.		
⑦	Factory Overhead	5,270	
	Cash (and other accounts)		5,270
	Record factory overhead costs such as insurance, utilities, rent, and depreciation.		
⑧	Finished Goods Inventory	8,940	
	Work in Process Inventory		8,940
	Record completion of Jobs B15, B16, and B17.		
⑨	Cost of Goods Sold	5,580	
	Finished Goods Inventory		5,580
	Record cost of goods sold for Jobs B15 and B16.		
⑩	Accounts Receivable	7,780	
	Sales		7,780
	Record sale of Jobs B15 and B16.		

* Exhibit 19.17 provides summary journal entries. *Actual* overhead is debited to Factory Overhead. *Applied* overhead is credited to Factory Overhead.

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Schedule of Cost of Goods Manufactured

Exhibit 2.18

ROAD WARRIORS
Schedule of Cost of Goods Manufactured
For the Month of March, 2017

Direct materials used	$ 1,800
Direct labor used	4,200
Factory overhead applied*	6,720
Total manufacturing costs	$12,720
Add: Work in process, March 1, 2017	0
Total cost of work in process	12,720
Less: Work in process, March 31, 2017	3,780
Cost of goods manufactured	$ 8,940

* Actual overhead = $6,920. Overhead is $200 underapplied.

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Adjust Factory Overhead

Exhibit 2.19

Factory Overhead	
Actual amounts	Applied amounts

Exhibit 2.20

Overhead Costs	Factory Overhead Balance Is	Overhead Is	Journal Entry Required		
Actual > Applied	Debit	Underapplied	Cost of Goods Sold	#	
			Factory Overhead		#
Actual < Applied	Credit	Overapplied	Factory Overhead	#	
			Cost of Goods Sold		#

Learning Objective P3: Describe and record the flow of overhead costs in job order costing.

Learning Objective

P4:
Determine adjustments for overapplied and underapplied factory overhead.

Adjust Underapplied or Overapplied Overhead

Dec. 31	Cost of Goods Sold	480	
	Factory Overhead		480
	To adjust for underapplied overhead costs.		

Learning Objective P4: Determine adjustments for overapplied and underapplied factory overhead.

NEED-TO-KNOW 2-6

A manufacturing company applied $300,000 of overhead to its jobs during the year. For the independent scenarios below, prepare the journal entry to adjust over- or underapplied overhead. Assume the adjustment amounts are not material.

1. Actual overhead costs incurred during the year equal $305,000.

Factory Overhead	
Actual OH Incurred	**OH Applied to Production**
305,000	300,000
Underapplied OH 5,000	

	General Journal	Debit	Credit
	Cost of Goods Sold	5,000	
	Factory Overhead		5,000

Learning Objective P4: Determine adjustments for overapplied and underapplied factory overhead.

NEED-TO-KNOW 2-6

A manufacturing company applied $300,000 of overhead to its jobs during the year. For the independent scenarios below, prepare the journal entry to adjust over- or underapplied overhead. Assume the adjustment amounts are not material.

2. Actual overhead costs incurred during the year equal $298,500.

Factory Overhead			
Actual OH Incurred		OH Applied to Production	
298,500		300,000	
	Overapplied		1,500

	General Journal	Debit	Credit
	Factory Overhead	1,500	
	Cost of Goods Sold		1,500

Learning Objective P4: Determine adjustments for overapplied and underapplied factory overhead.

Learning Objective

A1:
Apply job order costing in pricing services.

Pricing for Services

- Service providers also use job order costing.
- Cost for each individual job are track separately.
- Total costs include labor and overhead.

End of Chapter 2

