CHAPTER 16—Solutions

COSTING SYSTEMS: JOB ORDER COSTING

Discussion Questions

DQ1. The accounting concept of cost measurement focuses on determining the amount of the cost. The accounting concept of cost recognition determines when a cost should be recorded. And, the matching concept compares revenues with the costs that were required to generate them.

DQ2. Job order costing recognizes production costs for specific jobs; process costing first traces these costs to processes, departments, or work cells and then assigns costs to products. Job order costing measures cost for each completed unit while process costing measures cost in terms of units completed during a specific period. Job order costing uses a single Work in Process Inventory account to summarize the cost of all jobs in process while process costing uses many Work in Process Inventory accounts, one for each process, department, or work cell. Job order costing is used by companies making special or unique products or services while process costing is used by companies making similar or identical products or in long production runs.

DQ3. The matching rule tracks or matches costs against the revenues they generate each period. Costs flow into and out of the inventory accounts adhering to this rule.

Direct Materials. When direct materials arrive, the cost of the items increases the Materials Inventory account. Following a materials request, the items requested are issued to the production departments. Direct materials costs then decrease the Materials Inventory account and increase the Work in Process Inventory account. In addition, the costs of the requested materials decrease the appropriate accounts in the materials subsidiary ledger and increase the appropriate job order cost cards.

Direct Labor. When incurred, direct labor costs increase the Work in Process Inventory account and, at the same time, increase the appropriate job order cost cards.

Overhead. An estimated amount of overhead increases the Work in Process Inventory as work is done. The completed cost of goods produced decrease Work in Process Inventory and increase Finished Goods Inventory. When goods are sold, their costs are matched against the revenues generated. Cost of Goods Sold increases and Finished Goods decreases.

DQ4. Estimated and actual overhead costs are recognized and measured using the four steps. The four-step process involves planning an estimated rate at which overhead costs will be assigned to products or services, assigning overhead costs at this predetermined rate to products or services during production, measuring actual overhead costs as they are incurred, and reconciling the difference between the actual and applied overhead costs.

Discussion Questions (Concluded)

DQ5.	**When managers plan, information about costs helps them develop budgets, establish prices, set sales goals, plan production volumes, estimate product or service unit costs, and determine human resource needs. Daily, managers use cost information to make decisions about controlling costs, managing the company's volume of activity, ensuring quality, and negotiating prices. When managers evaluate results, they analyze actual and targeted information to evaluate performance and make any necessary adjustments to their planning and decision-making strategies. When managers communicate with stakeholders, they use unit costs to determine inventory balances and the cost of goods or services sold for the financial statements. They also analyze internal reports that compare the organization's measures of actual and targeted performance to determine whether cost goals for products or services are being achieved.**

Short Exercises

SE1. Job Order Versus Process Costing Systems

a.	process	d.	job order
b.	job order	e.	process
c.	process	f.	job order

SE2. Transactions in a Manufacturer's Job Order Costing System

a.	Dr. Materials Inventory, Cr. Accounts Payable
b.	Dr. Work in Process Inventory, Cr. Payroll Payable
c.	Dr. Work in Process Inventory, Cr. Materials Inventory
d.	Dr. Work in Process Inventory, Cr. Overhead

SE3. Transactions in a Manufacturer's Job Order Costing System

Work in Process Inventory				Overhead			
(a)	34,000			(a)	18,000	(b)	76,080
(b)	76,080						

Payroll Payable			
		(a)	52,000

SE4. Accounts for Job Order Costing

1.	Dr. Work in Process Inventory, Cr. Materials Inventory
2.	Dr. Work in Process Inventory, Cr. Payroll Payable
3.	Dr. Materials Inventory, Cr. Accounts Payable
4.	Dr. Overhead, Cr. Accounts Payable
5.	Dr. Work in Process Inventory, Cr. Overhead
6.	Dr. Finished Goods Inventory, Cr. Work in Process Inventory

SE5. Job Order Cost Card

				Job Order:	**16**
JOB ORDER COST CARD					
Custom Computers					
Kowloon, Hong Kong					
Customer:	**L. Kim**	**Batch:**		**Custom:**	**X**
Specifications:	**5 Computer Systems**				
Date of Order:	**4/4/2014**			**Date of Completion:**	**6/8/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Cost Summary**
Direct materials	**$ 540**	**$ 820**	**$1,360**
Direct labor	**340**	**620**	**960**
Overhead applied	**880**	**550**	**1,430**
Totals	**$1,760**	**$1,990**	**$3,750**
Units completed			**÷ 5**
Product unit cost			**$ 750**

SE6. Job Order Costing in a Service Organization

a.	**Dr. Accounts Receivable, Cr. Revenues from Landscaping Services**
b.	**Dr. Work in Process Inventory, Cr. Accounts Payable**
c.	**Dr. Work in Process Inventory, Cr. Cash**
d.	**Dr. Work in Process Inventory, Cr. Cash**

SE7. Job Order Costing with Cost-Plus Contracts

				Job Order:	**A7**
JOB ORDER COST CARD					
Doremus Tax Service					
Puyallup, Washington					
Customer:	**Arthur Farnsworth**	**Batch:**		**Custom:**	**X**
Specifications:	**Annual Individual Tax Return**				
Date of Order:	**3/24/2014**		**Date of Completion:**		**4/8/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Client interview:			
Supplies	**$ 10**	**$ —**	**$ 10**
Labor	**50**	**60**	**110**
Overhead (40% of interview labor costs)	**20**	**24**	**44**
Totals	**$ 80**	**$ 84**	**$164**
Preparation of return:			
Supplies	**$ —**	**$ 16**	**$ 16**
Computer time	**—**	**12**	**12**
Labor	**—**	**240**	**240**
Overhead (50% of preparation labor costs)	**—**	**120**	**120**
Totals	**$ —**	**$388**	**$388**
Delivery:			
Postage	**$ —**	**$ 8**	**$ 8**
Totals	**$ —**	**$ 8**	**$ 8**

Cost Summary to Date	**Total Cost**
Client interview	**$164**
Preparation of return	**388**
Delivery	**8**
Total	**$560**
Profit margin (20% of total cost)	**112**
Job revenue	**$672**

SE8. Calculation of Underapplied or Overapplied Overhead

Applied overhead	$27,000
Less actual overhead	25,870
Overapplied	$ 1,130

Since the overapplied amount is immaterial (less than 5% of actual overhead), the Cost of Goods Sold account should be decreased by $1,130 to adjust the balance to reflect actual overhead costs.

SE9. Computation of Overhead Rate

Predetermined Overhead Rate per Service Request	=	Total Estimated Overhead Costs / Total Estimated Service Requests	
	=	$18,290 / 3,100	service requests
	=	$5.90	per service request

SE10. Allocation of Overhead to Production

Overhead costs applied:

	$4	per direct labor hour
	×1,200	direct labor hours
	$4,800	

SE11. Uses of Unit Cost Information

a.	yes
b.	yes
c.	yes

Exercises: Set A

E1A. Product Costing

a.	yes	f.	no
b.	no	g.	no
c.	yes	h.	no
d.	yes	i.	yes
e.	yes	j.	yes

E2A. Costing Systems: Industry Linkage

a.	process	e.	job order
b.	process	f.	process
c.	job order	g.	process
d.	job order	h.	process

E3A. Costing Systems: Industry Linkage

a.	process	e.	process
b.	job order	f.	process
c.	process	g.	job order
d.	job order	h.	job order

E4A. Job Order Cost Flow

The cost flow of each of the three product cost elements and the Work in Process Inventory account can be described as follows:

Direct Materials. **When direct materials arrive, the cost of the items is debited to the Materials Inventory account. Following a materials request, the items requested are issued to the production departments. Direct materials costs are then transferred from the Materials Inventory account to the Work in Process Inventory account. In addition, the costs of the requested materials are subtracted from the appropriate accounts in the materials subsidiary ledger and added to the appropriate job order cost cards.**

Direct Labor. **When incurred, direct labor costs are charged to the Work in Process Inventory account and, at the same time, to the appropriate job order cost cards.**

Overhead. **All overhead costs, including indirect materials and indirect labor, are charged to the Overhead account.**

Overhead is applied to production using a predetermined overhead rate. Overhead applied is debited to the Work in Process Inventory account and credited to the Overhead account. Job order cost cards are updated at the same time to reflect overhead charges.

Work in Process Inventory **. All product costs flow through the Work in Process Inventory account and, at the same time, are accumulated on job order cost cards. When an order is completed, its total cost (as reflected on the job order cost card) is transferred from the Work in Process Inventory account to the Finished Goods Inventory account. The job order cost card is completed, pulled from the Work in Process Inventory subsidiary ledger, and used to update the Finished Goods Inventory subsidiary ledger.**

E5A. Work in Process Inventory: T Account Analysis

1.

Materials Inventory			
Beg. bal.	40,000	(a)	28,800
(c)	8,400	(c)	8,400

Work in Process Inventory			
Beg. bal.	9,000		
(a)	28,800		
(b)	8,000		
(d)	9,600		

Overhead			
(b)	2,600	(d)*	9,600
(c)	8,400		

Payroll Payable			
		(b)	10,600

Accounts Payable			
		(c)	8,400

*$8,000 × 120% = $9,600

2.

Work in Process Inventory account:		
Beginning balance, July 1		$ 9,000
Debits during July:		
	Direct materials	28,800
	Direct labor	8,000
	Overhead	9,600
		$55,400
Less transfers to Finished Goods Inventory		45,000
Ending balance, July 31		$10,400

E6A. T Account Analysis with Unknowns

JUNE

Materials Inventory

(a)	Beg. bal.	2,939		Requests:	
Purchases		5,100		Direct materials	5,025
End. bal.		3,014			

Work in Process Inventory

Beg. bal.		8,605		(c) Completed	15,701
Direct materials		5,025			
Direct labor		4,760			
(b)	Overhead	5,950	*		
(d)	End. bal.	8,639			

Finished Goods Inventory

Beg. bal.		7,764		Cost of goods sold	16,805
(c)	Completed during period	15,701			
End. bal.		6,660			

JULY

Materials Inventory

(e)	Beg. bal.	3,014		Requests:	
Purchases		6,216		(g) Direct materials	6,602
End. bal.		2,628			

Work in Process Inventory

(f)	Beg. bal.	8,639		Completed	21,861
(g)	Direct materials	6,602			
Direct labor		5,540			
(h)	Overhead	6,925	**		
(j)	End. bal.	5,845			

Finished Goods Inventory

Beg. bal.		6,660		(i) Cost of goods sold	25,006
Completed during period		21,861			
End. bal.		3,515			

* $4,760 × 125% = $5,950

** $5,540 × 125% = $6,925

E7A. T Account Analysis with Unknowns

Materials Inventory					
Beg. bal.	142,000			Used	256,000
(a) Purchases	164,000				
End. bal.	50,000				

Work in Process Inventory					
Beg. bal.	66,000			(c) Completed during period	924,400
Direct materials	256,000				
Direct labor	390,000				
(b) Overhead applied	351,000	*			
End. bal.	138,600				

Finished Goods Inventory					
Beg. bal.	129,000			Cost of goods sold	953,400
(c) Completed during period	924,400				
(d) End. bal.	100,000				

*$390,000 × 90% = $351,000

E8A. Job Order Costing: T Account Analysis

1. and 2.

Materials Inventory			
6/1	300	6/4	290
6/2	50		
End. bal.	60		

Work in Process Inventory			
6/4	250	6/16	2,050
6/15	1,000		
6/15	800		
End. bal.	—		

Finished Goods Inventory			
6/16	2,050	6/20	1,460
End. bal.	590		

Overhead			
6/4	40	6/15	800*
6/10	350	6/30	70
6/15	300		
6/30	180		
End. bal.	—		

Cash			
		6/10	350
		End. bal.	350

Accounts Receivable			
6/20	2,000		
End. bal.	2,000		

Prepaid Insurance			
		6/30	30
		End. bal.	30

Accumulated Depreciation—Machinery			
		6/30	150
		End. bal.	150

Accounts Payable			
		6/1	300
		6/2	50
		End. bal.	350

Payroll Payable			
		6/15	1,300
		End. bal.	1,300

Cost of Goods Sold			
6/20	1,460		
6/30	70		
End. bal.	1,530		

Sales			
		6/20	2,000
		End. bal.	2,000

*$1,000 × 80% = $800

E9A. Job Order Cost Card and Computation of Product Unit Cost

				Job Order:	**Z-6**

JOB ORDER COST CARD

Storage Company

Customer:	**Cedar Safe, Inc.**	**Batch:**		**Custom:**	**X**
Specifications:	**Cedar Storage Cabinets per Customer**				
Date of Order:	**2/10/2014**			**Date of Completion:**	**2/24/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials:			
Cedar		**$ 8,000**	
Pine		**6,000**	
Hardware		**2,000**	
Assembly supplies		**1,000**	
Total direct materials		**$17,000**	**$17,000**
Direct labor:			
Sawing		**$ 3,000**	
Shaping		**2,000**	
Finishing		**2,500**	
Assembly		**3,000**	
Total direct labor		**$10,500**	**10,500**
Overhead:			
($20.00 per machine hour)			
Sawing (120 hours)		**$ 2,400**	
Shaping (210 hours)		**4,200**	
Finishing (150 hours)		**3,000**	
Assembly (50 hours)		**1,000**	
Total overhead		**$10,600**	**10,600**
Total cost			**$38,100**
Units completed			**÷ 50**
Product unit cost			**$ 762**

E10A. Computation of Product Unit Cost

Total actual manufacturing costs:		
	Liability insurance, manufacturing	**$ 3,500**
	Depreciation, manufacturing equipment	**5,000**
	Direct materials	**34,000**
	Indirect labor, manufacturing	**3,600**
	Indirect materials	**2,000**
	Heat, light, and power, manufacturing	**2,500**
	Fire insurance, manufacturing	**2,400**
	Rent, manufacturing	**4,000**
	Direct labor	**20,000**
	Manager's salary, manufacturing	**4,800**
	Total manufacturing costs	**$81,800**

Computation of product unit cost:

	$81,800	**/**	**40,900**	**units**	**=**	**$2.00**	**per unit**

E11A. Computation of Product Unit Cost

Total actual manufacturing costs:		
	Manufacturing utilities	**$ 200**
	Depreciation, manufacturing equipment	**250**
	Indirect materials	**150**
	Direct materials	**1,000**
	Indirect labor	**400**
	Direct labor	**1,200**
	Insurance, manufacturing plant	**300**
	Rent, manufacturing plant	**2,500**
	Total manufacturing costs	**$6,000**

Computation of product unit cost:

	$6,000	**/**	**500**	**units**	**=**	**$12.00**	**per unit**

E12A. Computation of Product Unit Cost

1. **Dude Corporation**
Special Cost Analysis

	Job Order Cost Cards		
	Job B-2	Job B-3	Job B-4
Direct materials:			
Fabric Q	$ 1,000	$ 1,800	$17,600
Fabric Z	2,000	2,200	13,400
Fabric YB	5,000	6,000	2,000
Total	$ 8,000	$10,000	$33,000
Direct labor:			
Garment maker	$ 4,500	$ 8,000	$10,200
Layout	2,500	7,000	9,800
Packaging	3,000	5,000	5,000
Total	$10,000	$20,000	$25,000
Overhead:			
150% of direct labor costs	$15,000	$30,000	$37,500
Total cost	$33,000	$60,000	$95,500

2.	Units produced	÷ 500	÷ 1,200	÷ 500
	Product unit cost	$ 66.00	$ 50.00	$191.00

E13A. Job Order Costing in a Service Organization

JOB ORDER COST CARD

Cloud Storage Services

Customer:	**Jayson Holiday**
Job Order No.:	**XXYQ**
Contract Type:	**Cost-Plus**
Type of Service:	**Annual Internet Storage**
Date of Completion:	**November 6, 2014**

Costs Charged to Job				**Total Cost**
Software installation services:				
	Installation labor			**$30**
	Service overhead (	**100%**	*** of installation labor costs)**	**30**
	Total			**$60**
Internet services:				
	Internet storage			**$10**
	Service overhead (	**200%**	**of Internet storage costs)**	**20**
	Total			**$30**

$30 / $30 = 100%

Cost Summary to Date				**Total Cost**
	Software installation services			**$ 60**
	Internet services			**30**
	Total			**$ 90**
	Profit margin (	**60%**	**of total cost)**	**54**
	Contract revenue			**$144**

E14A. Computation of Overhead Rate

1. and 2.

	(1) Past Year		(2) Next Year's Percentage	(3) Next Year (1 × 2)	
Indirect materials and supplies, repair					
and maintenance, outside service					
contracts, indirect labor, factory					
supervision, factory insurance, heat,					
light, and power costs	$222,000		110%	$244,200	
Depreciation, machinery	85,000		112%	95,200	
Property taxes and miscellaneous					
overhead	13,000		120%	15,600	
Totals	$320,000			$355,000	
Divided by machine hours	40,000			50,000	*
Predetermined overhead rates	$ 8.00	/MH		$ 7.10	/MH

*40,000 + 10,000 = 50,000

E15A. Computation and Application of Overhead Rate

1. $900,000 × 125% = $1,125,000

2. Increase in labor hours:

75,000	hours	×	120%	=	90,000	hours

Predetermined overhead rate:

$1,125,000	/	90,000	hours =	$12.50	per direct labor hour

3. a. 89,920 hours × $12.50 per hour = $1,124,000

b. Overhead applied	$1,124,000
Less actual overhead incurred	1,143,400
Underapplied overhead	$ (19,400)

c. Since the underapplied overhead amount is immaterial, the Cost of Goods Sold account will be increased to reflect actual overhead costs.

Note to Instructor: Solutions for Exercises: Set B are provided separately on the Instructor's Resource CD and website.

Problems

P1. T Account Analysis with Unknowns

MAY

Materials Inventory

Beg. bal.		36,240			Requests	82,320
(a)	Purchases	84,990				
End. bal.		38,910				

Work in Process Inventory

Beg. bal.		56,480			(c) Completed	212,730
Direct materials		82,320				
(b)	Direct labor	66,500	*			
Overhead		53,200				
(d)	End. bal.	45,770				

Finished Goods Inventory

Beg. bal.		44,260			Cost of goods sold	209,050
(c)	Completed	212,730				
End. bal.		47,940				

JUNE

Materials Inventory

(e)	Beg. bal.	38,910			(h) Requests	93,080
Purchases		96,120				
End. bal.		41,950				

Work in Process Inventory

(f)	Beg. bal.	45,770			Completed	221,400
(h)	Direct materials	93,080				
Direct labor		72,250				
(i)	Overhead	57,800	**			
(k)	End. bal.	47,500				

Finished Goods Inventory

(g)	Beg. bal.	47,940			(j) Cost of goods sold	218,160
Completed		221,400				
End. bal.		51,180				

* $53,200 / 80% = $66,500

** $72,250 × 80% = $57,800

P2. Job Order Costing: T Account Analysis

1.

Materials Inventory			
1/1	215,400	1/4	231,300
1/2	49,500	1/21	246,150
1/19	218,000		
End. bal.	5,450		

Work in Process Inventory			
1/4	193,200	1/31	855,990
1/15	120,000		
1/15	108,000		
1/21	214,750		
1/31	132,000		
1/31	118,800		
End. bal.	30,760		

Finished Goods Inventory			
1/31	855,990	1/31	824,520
End. bal.	31,470		

Overhead			
1/4	38,100	1/15	108,000*
1/10	12,100	1/31	118,800**
1/15	60,620		
1/21	31,400		
1/31	62,240		
1/31	22,600		
End. bal.	260		

Cash			
		1/10	12,100
		End. bal.	12,100

Accounts Receivable			
1/31	996,800		
End. bal.	996,800		

Prepaid Insurance			
		1/31	3,700
		End. bal.	3,700

Accumulated Depreciation—Machinery			
		1/31	15,500
		End. bal.	15,500

Accounts Payable			
		1/1	215,400
		1/2	49,500
		1/19	218,000
		End. bal.	482,900

Payroll Payable			
		1/15	180,620
		1/31	194,240
		End. bal.	374,860

Property Taxes Payable			
		1/31	3,400
		End. bal.	3,400

Sales			
		1/31	996,800
		End. bal.	996,800

Cost of Goods Sold			
1/31	824,520		
End. bal.	824,520		

*$120,000 × 90% = $108,000

**$132,000 × 90% = $118,800

P2. Job Order Costing: T Account Analysis (Continued)

				Job Order:	**X**
JOB ORDER COST CARD					
Eagle Carts, Inc.					
Customer:	**Job X**		**Batch:**	**Custom:**	**X**
Specifications:	**Golf Carts per Customer Specs**				
Date of Order:	**1/4/2014**		**Date of Completion:**		**1/31/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials:		**$193,200**	
		178,170	
Total direct materials		**$371,370**	**$ 371,370**
Direct labor:		**$120,000**	
		118,500	
Total direct labor		**$238,500**	**238,500**
Overhead:			
(90% of direct labor costs)		**$214,650**	**214,650**
Total cost			**$ 824,520**
Units completed			**÷ 375**
Product unit cost			**$2,198.72**

				Job Order:	**Y**
JOB ORDER COST CARD					
Eagle Carts, Inc.					
Customer:	**Job Y**		**Batch:**	**Custom:**	**X**
Specifications:	**Golf Carts per Customer Specs**				
Date of Order:	**1/21/2014**		**Date of Completion:**		**1/31/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials		**$18,170**	**$18,170**
Direct labor		**7,000**	**7,000**
Overhead:			
(90% of direct labor costs)		**6,300**	**6,300**
Total cost			**$31,470**
Units completed			**÷ 10**
Product unit cost			**$ 3,147**

P2. Job Order Costing: T Account Analysis (Concluded)

				Job Order:	**Z**
	JOB ORDER COST CARD				
	Eagle Carts, Inc.				
Customer:	**Job Z**		**Batch:**	**Custom:**	**X**
Specifications:	**Golf Carts per Customer Specs**				
Date of Order:	**1/21/2014**		**Date of Completion:**		**1/31/2014**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials		**$18,410**	**$18,410**
Direct labor		**6,500**	**6,500**
Overhead:			
(90% of direct labor costs)		**5,850**	**5,850**
Total cost			**$30,760**
Units completed			
Product unit cost			

2.

Overhead incurred	**$227,060**
Overhead applied	**226,800**
Underapplied overhead	**$ 260**

Overhead

1/4	**38,100**	**1/15**	**108,000**
1/10	**12,100**	**1/31**	**118,800**
1/15	**60,620**		
1/21	**31,400**		
1/31	**62,240**		
1/31	**22,600**		
Bal.	***260***	**1/31**	***260***
End. bal.	**—**		

Cost of Goods Sold

1/31	**824,520**		
1/31	**260**		
End. bal.	**824,780**		

3. **The Overhead account's underapplied or overapplied overhead must be transferred to the Cost of Goods Sold account for cost of goods sold to reflect the actual overhead costs incurred during the period.**

P3. Job Order Cost Flow

1., 3., and 4.

Materials Inventory					
Beg. bal.	21,360		6/6	37,240	
6/4	33,120		6/23	38,960	
6/16	28,600				
6/22	31,920				
End. bal.	38,800				

Work in Process Inventory					
Beg. bal.	15,112		6/30	185,073	a
6/6	37,240				
6/15	23,680				
6/15	30,784				
6/23	38,960				
6/29	25,960				
6/29	33,748				
End. bal.	20,411	b			

Finished Goods Inventory					
Beg. bal.	17,120		6/30	183,000	
6/30	185,073	a			
End. bal.	19,193				

Overhead					
			6/15	30,784	c
			6/29	33,748	d
			End. bal.	64,532	

Accounts Receivable					
6/30	320,000				
End. bal.	320,000				

Payroll Payable					
			6/15	23,680	
			6/29	25,960	
			End. bal.	49,640	

Sales					
			6/30	320,000	
			End. bal.	320,000	

Cost of Goods Sold					
6/30	183,000				
End. bal.	183,000				

a $205,484 – $20,411 = $185,073

b Ending Work in Process Inventory:

Job 24-A	$ 4,560
Job 24-B	4,666
Job 24-C	6,035
Job 24-D	5,150
Total	$20,411

c $23,680 × 130% = $30,784

d $25,960 × 130% = $33,748

P3. Job Order Cost Flow (Concluded)

2. and 3.

Cost of ending Work in Process Inventory:

Job No.	Direct Materials	Direct Labor	Overhead	Total
24-A	$1,593	$1,290	$1,677	$ 4,560
24-B	1,492	1,380	1,794	4,666
24-C	1,987	1,760	2,288	6,035
24-D	1,608	1,540	2,002	5,150
	$6,680	$5,970	$7,761	$20,411

Costs of units completed:

Beginning balance, Work in Process Inventory	$ 15,112
Cost of direct materials, direct labor, and overhead added during period	190,372
Total costs included in Work in Process Inventory	$205,484
Less ending Work in Process Inventory	20,411
Cost of goods completed and transferred	$185,073

4.

Job 24-A:	
July beginning balance	$4,560
July costs:	
Direct labor	960
Overhead (130%)	1,248
Total cost	$6,768
Product unit cost:	
$6,768 / 1,800 pairs = $3.76	

Job 24-C:	
July beginning balance	$6,035
July costs:	
Direct labor	1,610
Overhead (130%)	2,093
Total cost	$9,738
Product unit cost:	
$9,738 / 900 pairs = $10.82	

P4. Allocation of Overhead

1.

Nature Cosmetics Company
Overhead Rate Computation Schedule
For This Year

Overhead Cost Item	(1) Last Year	(2) Projected Percentage Increase	(3) Projection This Year (1 × 2)
Indirect labor	$ 23,500	130%	$ 30,550
Employee benefits	28,600	130%	37,180
Manufacturing supervision	18,500	110%	20,350
Utilities	15,000	140%	21,000
Factory insurance	7,800	120%	9,360
Janitorial services	12,100	110%	13,310
Depreciation, factory and machinery	21,300	120%	25,560
Miscellaneous overhead	6,000	130%	7,800
Total overhead	$132,800		$165,110

Predetermined overhead rate for this year:

$165,110 / 68,786 machine hours = $2.40 * per machine hour

***Rounded**

2.

Job No.	Machine Hours	Predetermined Overhead Rate	Overhead Applied
2214	12,300	$2.40	$ 29,520
2215	14,200	$2.40	34,080
2216	9,800	$2.40	23,520
2217	13,600	$2.40	32,640
2218	11,300	$2.40	27,120
2219	8,100	$2.40	19,440
Totals	69,300		$166,320

3.

Overhead applied	$166,320
Actual overhead incurred this year	165,845
Overapplied overhead	$ 475

Decrease Cost of Goods Sold by $475 to reflect actual overhead costs.

4. The overhead rate was computed at the beginning of the year. During the year, as products were produced, the overhead rate was used to apply overhead to production. At year end, the Overhead account balance was computed, determined to be overapplied, and closed to the Cost of Goods Sold account so that it would reflect the actual overhead costs of the period.

P5. Allocation of Overhead

Direct materials cost			**$36,750**
Cost of purchased parts			**21,300**
Direct labor cost:			
	$16.00		
	× 220		**3,520**
Overhead cost:			
	$3,520		
	× 270%		**9,504**
Total costs assigned to the Grater order			**$71,074**

P6. T Account Analysis with Unknowns

JULY

Materials Inventory

Beg. bal.	52,000		Requests	77,000
(a) Purchases	52,000			
End. bal.	27,000			

Work in Process Inventory

Beg. bal.	24,000		(c) Completed	164,000
Direct materials	77,000			
(b) Direct labor	48,364	*		
Overhead	53,200			
(d) End. bal.	38,564			

Finished Goods Inventory

Beg. bal.	36,000		Cost of goods sold	188,000
(c) Completed	164,000			
End. bal.	12,000			

AUGUST

Materials Inventory

(e) Beg. bal.	27,000		(h) Requests	50,000
Purchases	31,000			
End. bal.	8,000			

Work in Process Inventory

(f) Beg. bal.	38,564		Completed	167,000
(h) Direct materials	50,000			
Direct labor	44,000			
(i) Overhead	48,400	**		
(k) End. bal.	13,964			

Finished Goods Inventory

(g) Beg. bal.	12,000		(j) Cost of goods sold	160,000
Completed	167,000			
End. bal.	19,000			

* $53,200 / 110% = $48,364 rounded

** $44,000 × 110% = $48,400

P7. Job Order Costing: T Account Analysis

1.

Materials Inventory			
9/1	59,400	9/3	26,850
9/4	22,830	9/10	35,990
9/23	41,200	9/27	36,510
End. bal.	24,080		

Work in Process Inventory				
9/3	26,850		9/30	322,400
9/10	29,510			
9/15	62,900			
9/15	75,480	*		
9/27	28,870			
9/30	64,220			
9/30	77,064	**		
End. bal.	42,494			

Finished Goods Inventory			
9/30	322,400	9/30	294,200
End. bal.	28,200		

Overhead			
9/8	10,875	9/15	75,480
9/10	6,480	9/30	77,064
9/15	58,510		
9/22	10,900		
9/27	7,640		
9/30	58,810		
9/30	3,910		
End. bal.	4,581		

Cash			
		9/4	22,830
		9/8	10,875
		9/22	10,900
		End. bal.	44,605

Accounts Receivable			
9/30	418,240		
End. bal.	418,240		

Accumulated Depreciation—Manufacturing Equipment			
		9/30	2,680
		End. bal.	2,680

Accounts Payable			
		9/1	59,400
		9/23	41,200
		End. bal.	100,600

Payroll Payable			
		9/15	154,390
		9/30	159,230
		End. bal.	313,620

Property Taxes Payable			
		9/30	1,230
		End. bal.	1,230

Sales			
		9/30	418,240
		End. bal.	418,240

Cost of Goods Sold			
9/30	294,200		
End. bal.	294,200		

Selling and Administrative Expenses	
9/15	32,980
9/30	36,200
End. bal.	69,180

*$62,900 × 120% = $75,480

**$64,220 × 120% = $77,064

P7. Job Order Costing: T Account Analysis (Continued)

				Job Order:	**A**
JOB ORDER COST CARD					
Rhile Industries, Inc.					
Customer:	**Job A**		**Batch:**	**Custom:**	**X**
Specifications:	**Uniforms per customer**				
Date of Order:	**9/3/14**		**Date of Completion:**		**9/30/14**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials:		$ 26,850	
		29,510	
		2,660	
Total direct materials		$ 59,020	$ 59,020
Direct labor:		$ 62,900	
		44,000	
Total direct labor		$106,900	106,900
Overhead:		$ 75,480	
(120% of direct labor costs)		52,800	
Total overhead		$128,280	128,280
Total cost			$294,200
Units completed			÷ 58,840
Product unit cost			$ 5.00

				Job Order:	**B**
JOB ORDER COST CARD					
Rhile Industries, Inc.					
Customer:	**Job B**		**Batch:**	**Custom:**	**X**
Specifications:	**Uniforms per customer**				
Date of Order:	**9/27/14**		**Date of Completion:**		**9/30/14**

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials:		$ 8,400	$ 8,400
Direct labor:		9,000	9,000
Overhead:			
(120% of direct labor costs)		10,800	10,800
Total cost			$28,200
Units completed			÷ 3,525
Product unit cost			$ 8.00

P7. Job Order Costing: T Account Analysis (Concluded)

Job Order:	**C**

JOB ORDER COST CARD

Rhile Industries, Inc.

Customer:	**Job C**	**Batch:**		**Custom:**	**X**
Specifications:	**Uniforms per customer**				
Date of Order:	**9/27/14**	**Date of Completion:**			

Costs Charged to Job	**Previous Months**	**Current Month**	**Total Cost**
Direct materials:		**$17,810**	**$17,810**
Direct labor:		**11,220**	**11,220**
Overhead:			
(120% of direct labor costs)		**13,464**	**13,464**
Total cost			**$42,494**
Units completed			
Product unit cost			

2.

Overhead incurred	**$157,125**
Overhead applied	**152,544**
Underapplied overhead	**$ 4,581**

Overhead

9/8	**10,875**	**9/15**	**75,480**
9/10	**6,480**	**9/30**	**77,064**
9/15	**58,510**		
9/22	**10,900**		
9/27	**7,640**		
9/30	**58,810**		
9/30	**3,910**		
Bal.	***4,581***	**9/30**	***4,581***
End. bal.	**—**		

Cost of Goods Sold

9/30	**294,200**		
9/30	**4,581**		
End. bal.	**298,781**		

3. **The Overhead account's underapplied or overapplied overhead must be transferred to the Cost of Goods Sold account for cost of goods sold to reflect the actual overhead costs incurred during the period.**

P8. Job Order Cost Flow

1., 3., and 4.

Materials Inventory					
Beg. bal.	27,450		2/4	9,080	
2/6	7,200		2/13	5,940	
2/12	8,110		2/25	7,600	
2/24	5,890				
End. bal.	26,030				

Work in Process Inventory					
Beg. bal.	22,900		2/28	76,470	a
2/4	9,080				
2/13	5,940				
2/14	13,750				
2/14	19,250				
2/25	7,600				
2/28	13,230				
2/28	18,522				
End. bal.	33,802	b			

Finished Goods Inventory					
Beg. bal.	19,200		2/28	89,000	
2/28	76,470	a			
End. bal.	6,670				

Overhead					
			2/14	19,250	c
			2/28	18,522	d
			End. bal.	37,772	

Accounts Receivable					
2/28	152,400				
End. bal.	152,400				

Payroll Payable					
			2/14	13,750	
			2/28	13,230	
			End. bal.	26,980	

Sales					
			2/28	152,400	
			End. bal.	152,400	

Cost of Goods Sold					
2/28	89,000				
End. bal.	89,000				

a $110,272 – $33,802 = $76,470

b Ending Work in Process Inventory:

Job AJ-10	$ 7,564
Job AJ-14	8,944
Job AJ-15	6,916
Job AJ-16	10,378
Total	$33,802

c $13,750 × 140% = $19,250

d $13,230 × 140% = $18,522

P8. Job Order Cost Flow (Concluded)

2. and 3.

Cost of ending Work in Process Inventory:

Job No.	Direct Materials	Direct Labor	Overhead	Total
AJ-10	$ 3,220	$1,810	$ 2,534	$ 7,564
AJ-14	3,880	2,110	2,954	8,944
AJ-15	2,980	1,640	2,296	6,916
AJ-16	4,690	2,370	3,318	10,378
	$14,770	$7,930	$11,102	$33,802

Costs of units completed:

Beginning balance, Work in Process Inventory	$ 22,900
Cost of direct materials, direct labor, and overhead added during period	87,372
Total costs included in Work in Process Inventory	$110,272
Less ending Work in Process Inventory	33,802
Cost of goods completed and transferred	$ 76,470

4.

Job AJ-10:	
March beginning balance	$ 7,564
March costs:	
Direct labor	720
Overhead (140%)	1,008
Total cost	$ 9,292
Product unit cost:	
$9,292 / 40 units = $232.30	

Job AJ-14:	
March beginning balance	$ 8,944
March costs:	
Direct labor	1,140
Overhead (140%)	1,596
Total cost	$11,680
Product unit cost:	
$11,680 / 50 units = $233.60	

P9. Allocation of Overhead

1.

Gyllstrom Products, Inc.
Overhead Rate Computation Schedule
For This Year

Overhead Cost Item	(1) Last Year	(2) Projected Percentage Increase	(3) Projection This Year (1 × 2)
Indirect materials	$ 58,000	130%	$ 75,400
Indirect labor	25,000	120%	30,000
Supervision	41,000	110%	45,100
Utilities	11,200	120%	13,440
Labor-related costs	9,000	110%	9,900
Depreciation, factory	10,500	110%	11,550
Depreciation, machinery	27,000	120%	32,400
Property taxes	3,000	120%	3,600
Insurance	2,000	120%	2,400
Miscellaneous overhead	5,000	110%	5,500
Total overhead	$191,700		$229,290

Predetermined overhead rate for this year:

$229,290 / 45,858 machine hours = $5.00 per machine hour

2.

Job No.	Machine Hours	Predetermined Overhead Rate	Overhead Applied
H-142	7,840	$5.00	$ 39,200
H-164	5,260	$5.00	26,300
H-175	8,100	$5.00	40,500
H-201	10,680	$5.00	53,400
H-218	12,310	$5.00	61,550
H-304	2,460	$5.00	12,300
Totals	46,650		$233,250

3.

Actual overhead incurred this year	$234,000
Overhead applied	233,250
Underapplied overhead	$ 750

Increase Cost of Goods Sold by $750 to reflect actual overhead costs.

4. The overhead rate was computed at the beginning of the year. During the year, as products were produced, the overhead rate was used to apply overhead to production. At year end, the Overhead account balance was computed, determined to be underapplied, and closed to the Cost of Goods Sold account so that it would reflect the actual overhead costs of the period.

P10. Allocation of Overhead

Cost of direct materials			**$17,450**
Cost of purchased parts			**14,800**
Direct labor costs:			
	$16.50		
	× 140	**hours**	**2,310**
Overhead cost:			
	$2,310		
	× 240%		**5,544**
Total costs assigned to the Kent order			**$40,104**

Cases

C1. Business Communication: Product Costing Systems

1. a. The memo is addressed to Jordan Smith, the president of Hawk Manufacturing. In general, the memo should be thorough, yet brief. The writer should be aware of the president's preferences and try to meet her standards. Presidents are usually too busy to read detailed, lengthy reports.

b. The purposes of the memo are to identify sources of waste, to develop performance measures to account for the waste, and to eliminate the current costs associated with such waste.

c. ***Information needed:*** The writer needs to know information about the sources of waste, specific performance measures that can account for the waste, and the estimated costs associated with such waste.

Obtaining the information: Information about specific performance measures can be provided by the Production and Engineering Design departments. The Production Department can provide information about work that has had to be redone: the tasks performed, the individuals involved, the length of time required, and the quantity and types of materials wasted. The Engineering Design Department can provide information about previous work involving the redesign of products: the tasks performed, the individuals involved, the length of time required, and the changes required in materials or changes required in materials or production processes.

The Accounting Department can provide some information about the estimated costs associated with the waste. However, the information in the problem has limited value. It includes aggregated amounts that provide little information about individual sources of waste.

Suggested performance measures for the two sources of waste:

Waste	Performance Measures
Redoing work in the Production Department	Number of labor hours or machine hours required to redo the work
	Number of parts reworked
Redesigning products in the Engineering Design Department	Number of requests for redesign
	Number of engineering labor hours related to redesigning products that did not meet customer specifications

These nonfinancial, quantitative performance measures can be multiplied by a cost to estimate the total cost of waste. The manager, working with an accountant, can design a system to identify the appropriate cost basis for each measure, such as the cost per labor hour or machine hour to adjust work and the cost per request for redesign or cost per engineering hour spent on product designs that do not support customers' specifications.

C1. Business Communication: Product Costing Systems (Concluded)

Accounting information: **The accounting information provided in the problem is not sufficient for the memo because the current product costing system does not isolate costs by source. As a result, it is impossible to identify the costs associated with activities that are wasteful and non-value-adding. The manager, working with an accountant, can design a system to capture this information.**

d. **The president has allowed two weeks to complete the work. Because the accounting system is inadequate, a significant portion of that time will be needed to gather the estimated costs associated with sources of waste.**

2. **Outline of the sections in the memo:**

MEMORANDUM

To:	**Jordan Smith**
From:	**Student's name**
Date:	**Today's date**
Topic:	**Recommendations for reducing waste in production and engineering design**

I.	**Introduction: Purpose of the memo**
II.	**Description of two sources of waste**
III.	**Recommended performance measures to account for the waste**
IV.	**Summary of estimated costs associated with the waste**

C2. Group Activity: Job Order Costing

This assignment is designed to develop students' interviewing, data-gathering, and writing skills. Students will identify similarities and differences in the processes, documentation, and record-keeping practices of small businesses. Some interviewees will be very knowledgeable about the costs of running their businesses. Others will be less familiar with these costs. It is helpful for students to recognize the variations that exist in business practices.

Group students based on the type of business they have selected. Discussion within the groups should focus on the questions in part 5 of the assignment (estimating costs and selling prices, differences in documentation and recordkeeping practices, and students' opinions about the effectiveness of the businesses' accounting processes). Select a few groups to share the main points of their discussion with the class.

C3. Ethical Dilemma: Costing Procedures and Ethics

This is a case of defrauding the federal government. Laws have been broken in this scenario. Roger Parker should report the incident to his superior. He should also tell Harris Johnson to correct the pricing error as soon as possible. Parker has the obligation to work toward a successful solution to the problem. Otherwise, he could face charges as a co-conspirator. If he keeps quiet about an illegal transaction, he becomes a party to that transaction.

C4. Conceptual Understanding: Role of Cost Information in Software Development

There are several reasons for using economic value instead of developer labor cost in the "good enough" measure of performance for software development companies. First, these companies develop products with very short product lives because improvements in computer chips and hardware occur so rapidly. The ability to beat competitors by bringing new software programs to market quickly means the company has a better opportunity of capturing the market demand and making the sale. Second, because software developers' salaries are usually tied to the success of the company's products through employee stock incentives and bonuses, the true cost of salaries cannot be determined until after the product has been on the market. Finally, in emerging companies based on the Internet, it is not a company's profit margin that drives investor interest, but rather a company's growth potential. Thus, the cost standards used by established manufacturing companies, where the time from idea to market is not crucial to a product's success, where labor cost can easily be measured, and where a company's profitability is a good indicator of investor interest, do not apply.

C5. Interpreting Management Reports: Nonfinancial Data

1. The reduced lead time and increased productivity indicate that the quality of the manufacturing process improved. The quality of the manufactured engine parts cannot be assessed with these measures. Other performance measures are needed to determine the product's quality.

2. To compete effectively, Hawk must be prepared to offer a lower selling price. Hawk could do this and still remain profitable if some of its costs were reduced. Reduced manufacturing costs would allow Hawk to lower its selling price while still remaining profitable.

3. No. Since the structure of the manufacturing process did not change significantly, the product costing system would remain unchanged.

Although the product costing system remains unchanged, the amount of costs accumulated in the product costing system will change because the manufacturing process improved. Thus, the product unit cost will change.

4. The total manufacturing cost per engine part would decrease because:

a. costs of storing inventory will decrease because the inventory level has decreased

b. labor and overhead costs will decrease slightly because manufacturing time has decreased and productivity has increased

C6. Continuing Case: Cookie Company

This is a fun class activity that takes little class time and generates a lot of course positives.