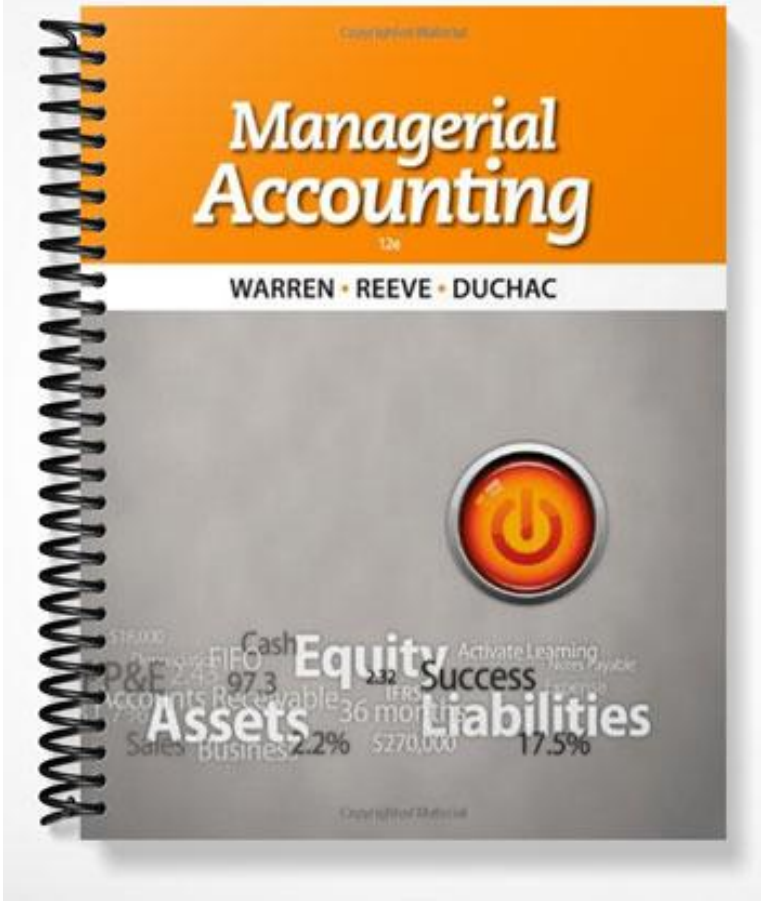
SOLUTIONS MANUAL



CHAPTER 17 (FINMAN); CHAPTER 2 (MAN)
JOB ORDER COSTING

DISCUSSION QUESTIONS

1. **a.** Job order cost system and process cost system.

b. The job order cost system provides a separate record of each quantity of product that passes through the factory.

c. Process cost systems accumulate costs for each department or process within a factory.

2. Job order costing is used by firms that sell custom goods and services to customers. The job order system is frequently associated with firms that will produce a product or service specifically to a customer order.

3. Work in process

4. **a.** Purchase invoice or receiving report
b. Materials requisition

5. A job cost sheet is the subsidiary ledger to the work in process control account. The cost of materials, labor, and overhead are listed on each separate job cost sheet for each job. A summary of all the job cost sheets during an accounting period is the basis for journal entries to the control accounts.

6. The clock card is a means of recording the hours spent by employees in the factory. The time ticket is a means of recording the time the employee spends on a specific job.

7. The predetermined overhead rate is computed using estimated amounts at the beginning of the period. This is because managers need timely information on the product costs of each job. If a company waited until all overhead costs were known at the end of the period, the allocated factory overhead would be accurate, but not timely. Only through timely reporting can managers adjust manufacturing methods or product pricing.

8. **a.** The predetermined factory overhead rate is determined by dividing the estimated total factory overhead costs for the forthcoming year by an estimated activity base, one that reflects the consumption or use of factory overhead costs.

b. Direct labor cost, direct labor hours, and machine hours.

9. **a.** **(1)** If the amount of factory overhead applied is greater than the actual factory overhead incurred, factory overhead is overapplied.

(2) If the amount of actual factory overhead is greater than the amount applied, factory overhead incurred is underapplied.

b. Underapplied
c. Deferred credit

DISCUSSION QUESTIONS (Continued)

10. Job order cost accumulation would be most appropriate for professional service firms that provide extended, project-type services for clients. Examples would be architectural, consulting, advertising, or legal services. Job cost sheets would accumulate all direct costs of servicing the client. Such costs would include labor, materials, travel, and subcontracted services. In addition, overhead would be applied using a predetermined overhead rate. The costs accumulated by the job cost sheet would be treated as work in process (a current asset) until the service is completed. Once completed, the cost would be transferred to the cost of services on the income statement.

PRACTICE EXERCISES

PE 17–1A (FIN MAN); PE 2–1A (MAN)

Feb.	8	Materials	576,000	
		Accounts Payable		576,000
		$576,000 = 72,000 × $8.		
	19	Work in Process*	520,000	
		Materials		520,000

* Job 60 $224,000 = 32,000 × $7
Job 61 296,000 = 37,000 × $8
Total $520,000

PE 17–1B (FIN MAN); PE 2–1B (MAN)

Aug.	4	Materials	168,000	
		Accounts Payable		168,000
		$168,000 = 12,000 × $14.		
	24	Work in Process*	126,800	
		Materials		126,800

* Job 40 $ 40,000 = 5,000 × $8
Job 42 86,800 = 6,200 × $14
Total $126,800

PE 17–2A (FIN MAN); PE 2–2A (MAN)

Work in Process*		837,000	
Wages Payable			837,000

* Job 60 $360,000 = 15,000 hours × $24.00
Job 61 477,000 = 18,000 hours × $26.50
Total $837,000

PE 17–2B (FIN MAN); PE 2–2B (MAN)

Work in Process*		186,200	
Wages Payable			186,200

* Job 40 $ 87,500 = 3,500 hours × $25
Job 42 98,700 = 4,200 hours × $23.50
Total $186,200

PE 17–3A (FIN MAN); PE 2–3A (MAN)

Factory Overhead	186,000	
Materials		34,000
Wages Payable		81,000
Utilities Payable		10,000
Accumulated Depreciation—Factory		61,000

PE 17–3B (FIN MAN); PE 2–3B (MAN)

Factory Overhead	66,600	
Materials		17,500
Wages Payable		22,000
Utilities Payable		9,600
Accumulated Depreciation—Factory		17,500

PE 17–4A (FIN MAN); PE 2–4A (MAN)

a. $5.50 per direct labor hour = $2,200,000 ÷ 400,000 direct labor hours

b.

Job 60	$ 82,500	= 15,000 hours × $5.50 per hour
Job 61	99,000	= 18,000 hours × $5.50 per hour
	$181,500	

c.

Work in Process	181,500	
Factory Overhead		181,500

PE 17–4B (FIN MAN); PE 2–4B (MAN)

a. $9.00 per direct labor hour = $810,000 ÷ 90,000 direct labor hours

b.

Job 40	$31,500	= 3,500 hours × $9.00 per hour
Job 42	37,800	= 4,200 hours × $9.00 per hour
	$69,300	

c.

Work in Process	69,300	
Factory Overhead		69,300

PE 17–5A (FIN MAN); PE 2–5A (MAN)

a.

	Job 60	Job 61
Direct materials	$224,000	$296,000
Direct labor	360,000	477,000
Factory overhead	82,500	99,000
Total costs	$666,500	$872,000

b. Job 60 $26.66 = $666,500 ÷ 25,000 units
Job 61 $27.25 = $872,000 ÷ 32,000 units

PE 17–5B (FIN MAN); PE 2–5B (MAN)

a.

	Job 40	Job 42
Direct materials	$ 40,000	$ 86,800
Direct labor	87,500	98,700
Factory overhead	31,500	37,800
Total costs	$159,000	$223,300

b. Job 40 $15.90 = $159,000 ÷ 10,000 units
Job 42 $20.30 = $223,300 ÷ 11,000 units

PE 17–6A (FIN MAN); PE 2–6A (MAN)

$24,400,000 = $1,600,000 + (475,000 × $48.00)*

* Cost per unit of goods produced during the year = $48.00 = $24,000,000 ÷ 500,000 units

PE 17–6B (FIN MAN); PE 2–6B (MAN)

$3,085,000 = $310,000 + (185,000 × $15.00)*

* Cost per unit of goods produced during the year = $15.00 = $3,000,000 ÷ 200,000 units

EXERCISES

Ex. 17–1 (FIN MAN); Ex. 2–1 (MAN)

a. Materials requisitioned for use (both direct and indirect).
b. Factory labor used (both direct and indirect).
c. Application of factory overhead costs to jobs.
d. Jobs completed.
e. Goods sold.

Ex. 17–2 (FIN MAN); Ex. 2–2 (MAN)

a. Cost of goods sold:

Sales	$4,500,000	
Less gross profit	810,000	
Cost of goods sold	$3,690,000	

b. Direct materials cost:

Materials purchased		$1,530,000
Less: Indirect materials	$117,000	
Materials inventory	113,400	230,400
Direct materials cost		$1,299,600

c. Direct labor cost:

Total manufacturing costs for the period		$3,330,000
Less: Direct materials cost	$1,299,600	
Factory overhead*	441,000	1,740,600
Direct labor cost		$1,589,400

* $117,000 + $270,000 + $54,000

Ex. 17–3 (FIN MAN); Ex. 2–3 (MAN)

a.

RECEIVED			ISSUED			BALANCE			
Receiving Report Number	Quantity	Unit Price	Materials Requisition Number	Quantity	Amount	Date	Quantity	Unit Price	Amount
						July 1	300	$18.00	$5,400
31	200	$20				July 2	300	$18.00	5,400
							200	$20.00	4,000
			106	320	$5,800*	July 6	180	$20.00	3,600
37	140	32				July 12	180	$20.00	3,600
							140	$32.00	4,480
			115	200	4,240**	July 21	120	$32.00	3,840

* July 6 issuance — 300 at $18.00 = $5,400; 20 at $20.00 = 400; $5,800

** July 21 issuance — 180 at $20.00 = $3,600; 20 at $32.00 = 640; $4,240

b. Ending wire cable balance:

120 at $32.00..... $3,840

c.

Work in Process ($5,800 + $4,240)	10,040	
Materials		10,040

d. Comparing quantities on hand as reported in the materials ledger with predetermined order points enables management to order materials before a lack of materials causes idle time. Also, the subsidiary ledger can include columns for recording quantities ordered, so that management can have easy access to information about materials on order.

Ex. 17–4 (FIN MAN); Ex. 2–4 (MAN)

Work in Process	155,050	
Factory Overhead	2,800	
Materials		157,850

Ex. 17–5 (FIN MAN); Ex. 2–5 (MAN)

a.

Materials*	1,471,540	
Accounts Payable		1,471,540

* $282,240 + $392,000 + $770,000 + $27,300

b.

Work in Process	1,463,750	
Factory Overhead	29,000	
Materials		1,492,750

c.

	Fabric	Polyester Filling	Lumber	Glue
Balance, May 1	$ 56,000	$ 16,800	$ 125,300	$ 5,460
May purchases	282,240	392,000	770,000	27,300
Less May requisitions	(263,750)	(354,100)	(845,900)	(29,000)
Balance, May 31	$ 74,490	$ 54,700	$ 49,400	$ 3,760

Ex. 17–6 (FIN MAN); Ex. 2–6 (MAN)

Work in Process	69,960	
Factory Overhead	7,200	
Wages Payable		77,160

Ex. 17–7 (FIN MAN); Ex. 2–7 (MAN)

a.

Work in Process	3,815	
Factory Overhead	385	
Wages Payable		4,200

Supporting Calculations:

		Labor Costs (Hourly Rate × Hours)				
	Hourly Rate	Job 501	Job 502	Job 503	Direct Labor (sum of job costs)	Indirect Labor
Frank Davis……	$35	$420	$490	$385	$1,295	$105
Miles Coultrain…	40	560	400	480	1,440	160
John Morgan……	30	300	360	420	1,080	120
					$3,815	$385

b. The direct labor costs for the completed jobs would become part of the finished goods inventory. The direct labor costs for Job 503 would remain part of the work in process inventory.

Ex. 17–8 (FIN MAN); Ex. 2–8 (MAN)

a.

Work in Process	22,600	
Factory Overhead	3,900	
Wages Payable		26,500

b.

Work in Process	11,300	
Factory Overhead		11,300

$22,600 ÷ $40 per hour = 565 hours
565 hours × $20 per hour = $11,300

Ex. 17–9 (FIN MAN); Ex. 2–9 (MAN)

a. Factory 1: $24.00 per machine hour ($1,008,000 ÷ 42,000 machine hours)

b. Factory 2: $41.00 per direct labor hour ($861,000 ÷ 21,000 direct labor hours)

c. Factory 1:

Work in Process	73,200	
Factory Overhead		73,200
($24.00 × 3,050).		

Factory 2:

Work in Process	82,000	
Factory Overhead		82,000
($41.00 × 2,000).		

d. Factory 1—$1,280 debit (underapplied) ($74,480 – $73,200)
Factory 2—$4,500 credit (overapplied) ($77,500 – $82,000)

Ex. 17–10 (FIN MAN); Ex. 2–10 (MAN)

The estimated shop overhead is determined as follows:

Shop and repair equipment depreciation	$ 53,500
Shop supervisor salaries	140,000
Shop property taxes	26,300
Shop supplies	20,200
Total shop overhead	$240,000

The engine parts and shop labor are direct to the jobs and are not included in the shop overhead rate. The advertising and administrative expenses are selling and administrative expenses that are not included in the shop overhead but are treated as period expenses.

The estimated activity base is determined by dividing the shop direct labor cost by the direct labor rate, as follows:

$$\frac{\$750{,}000}{\$25 \text{ per hour}} = 30{,}000 \text{ hours}$$

The predetermined shop overhead rate is:

$$\frac{\$240{,}000}{30{,}000 \text{ hours}} = \$8.00 \text{ per direct labor hour}$$

Ex. 17–11 (FIN MAN); Ex. 2–11 (MAN)

a. Estimated annual operating room overhead: $873,600

Estimated operating room activity base, number of operating room hours:

Hours per day		8
Days per week	×	7
Weeks per year (net of maintenance weeks)	×	48
Estimated annual operating room hours		2,688

Predetermined surgical overhead rate:

$$\frac{\$873{,}600}{2{,}688 \text{ hours}} = \$325 \text{ per hour}$$

b. Wayne Lawrence's procedure:

Number of surgical room hours		4
Predetermined surgical room overhead rate	×	325
Procedure overhead		$1,300

c. Actual hours used in January		232
Predetermined surgical room overhead rate	×	$ 325
Surgical room overhead applied, January		$75,400
Actual surgical room overhead incurred, January		65,500
Overapplied surgical room overhead (credit balance)		$ 9,900

Ex. 17–12 (FIN MAN); Ex. 2–12 (MAN)

a.

Finished Goods*	753,000	
Work in Process		753,000

* $160,000 + $175,000 + $100,000 + $318,000

b. Cost of unfinished jobs at June 30:

Balance in Work in Process at June 1		$ 40,000	
Add:	Direct materials	270,000	
	Direct labor	320,000	
	Factory overhead	176,000	$806,000
Less:	Jobs finished during June		753,000
Balance in Work in Process at June 30			$ 53,000

Ex. 17–13 (FIN MAN); Ex. 2–13 (MAN)

a.

Work in Process	25,990	
Factory Overhead	2,000	
Materials		27,990

b.

Work in Process	10,200	
Factory Overhead	9,000	
Wages Payable		19,200

c.

Work in Process	7,140	
Factory Overhead		7,140

Predetermined overhead rate:

Job 401: $2,240 ÷ $3,200 = 70% or
Job 402: $2,100 ÷ $3,000 = 70%

Direct labor cost × Predetermined factory overhead rate:

$10,200 × 70% = $7,140

d.

Finished Goods*	22,580	
Work in Process		22,580

* $13,680 + $8,900

Ex. 17–14 (FIN MAN); Ex. 2–14 (MAN)

a.

KIRCHHOFF INC. Income Statement For the Month Ended April 30, 2014		
Revenues		$1,125,000
Cost of goods sold		635,000
Gross profit		$ 490,000
Selling expenses	$275,000	
Administrative expenses	100,000	375,000
Income from operations		$ 115,000

b. **Materials inventory:**

Purchased materials	$320,000
Less: Materials used in production	275,000
Materials inventory, April 30	$ 45,000

Work in process inventory:

Materials used in production	$275,000
Direct labor	236,250
Factory overhead (80% × $236,250)	189,000
Additions to work in process	$700,250
Less: Transferred to finished goods	670,000
Work in process inventory, April 30	$ 30,250

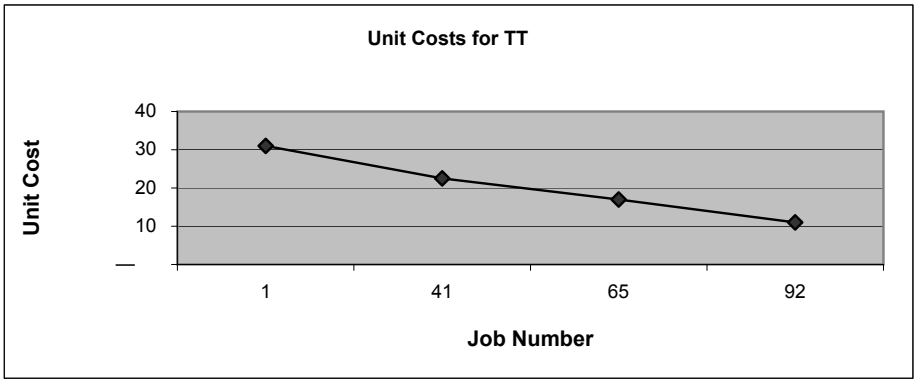
Finished goods inventory:

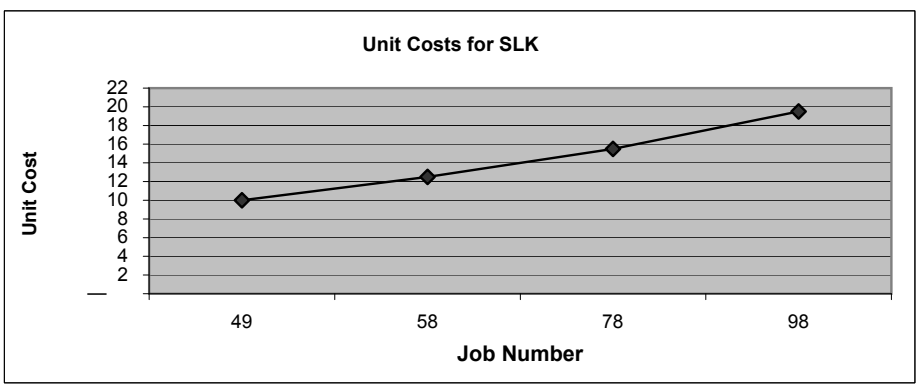
Transferred to finished goods	$670,000
Less: Cost of goods sold	635,000
Finished goods inventory, April 30	$ 35,000

Ex. 17–15 (FIN MAN); Ex. 2–15 (MAN)

a.

Date	Job. No.	Quantity	Product	Amount	Unit Cost
Jan. 2	1	520	TT	$16,120	$31.00
Jan. 15	22	1,610	SS	20,125	$12.50
Feb. 3	30	1,420	SS	25,560	$18.00
Mar. 7	41	670	TT	15,075	$22.50
Mar. 24	49	2,210	SLK	22,100	$10.00
May 19	58	2,550	SLK	31,875	$12.50
June 12	65	620	TT	10,540	$17.00
Aug. 18	78	3,110	SLK	48,205	$15.50
Sept. 2	82	1,210	SS	16,940	$14.00
Nov. 14	92	750	TT	8,250	$11.00
Dec. 12	98	2,700	SLK	52,650	$19.50





Ex. 17–15 (FIN MAN); Ex. 2–15 (MAN) (Concluded)

As can be seen, the unit costs behave differently for each product. SLK has increasing unit costs during the year, SS is steady, and TT has decreasing unit costs during the year.

b. Management should want to determine why SLK costs are increasing and why TT costs are decreasing. This information can be determined from the job cost sheets for each job. By comparing the cost sheets from job to job (for a particular product), management can isolate the cause of the cost changes. The cost sheets will show how materials, labor, and overhead are consumed across the production process for each job. This information can isolate the problem or opportunity areas.

Ex. 17–16 (FIN MAN); Ex. 2–16 (MAN)

a. The first item to note is that the cost did not go up due to any increases in the cost of labor or materials. Rather, the cost of the plaques increased because Job 105 used more labor and materials per unit than did Job 101. Specifically, Job 101 required exactly the same number of backboards and brass plates as the number of actual plaques shipped. However, Job 105 required four more backboards and brass plates than the number actually shipped (34 vs. 30). This is illustrated as follows:

Job 101:	
Materials	
Walnut plaques:	
Actual units used	**40 units**
Expected units needed to produce 40 plaques	**40 units**
Difference	**0 units**
Brass plates:	
Actual units used	**40 units**
Expected units needed to produce 40 plaques	**40 units**
Difference	**0 units**
Labor	
Engraving:	
Actual labor hours used	**20 hours**
Expected labor hours to produce 40 plaques (40 units × 30 min. per unit)/60 min. per hour	**20 hours**
Difference	**0 hours**
Assembly:	
Actual labor hours used	**10 hours**
Expected labor hours to produce 40 plaques (40 units × 15 min. per unit)/60 min. per hour	**10 hours**
Difference	**0 hours**

Ex. 17–16 (FIN MAN); Ex. 2–16 (MAN) (Concluded)

Job 105:

Materials

Walnut plaques:

Actual units used	34 units
Expected units needed to produce 30 plaques	30 units
Difference	4 units

Brass plates:

Actual units used	34 units
Expected units needed to produce 30 plaques	30 units
Difference	4 units

Labor

Engraving:

Actual labor hours used	17 hours
Expected labor hours to produce 30 plaques	15 hours
(30 units × 30 min. per unit)/60 min. per hour	
Difference	2 hours

Assembly:

Actual labor hours used	8.5 hours
Expected labor hours to produce 30 plaques	7.5 hours
(30 units × 15 min. per unit)/60 min. per hour	
Difference	1.0 hour

Job 105's 25.5 labor hours are 3.0 more (25.5 hrs. – 22.5 hrs.) than should have been expected for a job of 30 plaques [(30 × 45 min.)/60 min. = 22.5 hrs.]. As a result, the additional hours of labor cost, applied factory overhead, and direct materials cost cause the unit cost of Job 105 to increase.

b. Apparently, the engraving and assembly work is becoming sloppy. Job 105 required 34 engraved brass plates in order to get 30 with acceptable quality. It is likely that the engraver is not being careful in correctly spelling the names. The names should be supplied to the engraver, using large typewritten fonts, so that it is easy to read the names. The engraver should be instructed to be careful in engraving the names. The assembly operation also needs some improvement. It took 34 assembly operations to properly assemble 30 plaques. It may be that the plates are assembled off-register (crooked) to the backboard. This could be improved by using a fixture to properly align the plate to the backboard. Alternatively, it's possible misengraved plaques were assembled to backboards and needed to be disassembled, reengraved, and reassembled to new backboards.

Ex. 17–17 (FIN MAN); Ex. 2–17 (MAN)

a.

May	2	Work in Process (200 hrs. × $140)	28,000	
		Salaries Payable		28,000
	7	Work in Process	14,600	
		Cash		14,600
	11	Work in Process (300 hrs. × $175)	52,500	
		Salaries Payable		52,500
	16	Work in Process	40,000	
		Consultant Fees Payable		40,000
	21	Work in Process (500 hrs. × $50)	25,000	
		Office Overhead		25,000
	31	Office Overhead	26,000	
		Cash		26,000
	31	Office Overhead	6,000	
		Supplies		6,000
	31	Salaries Payable	38,640	
		Cash		38,640
	31	Accounts Receivable	185,000	
		Fees Earned		185,000
	31	Cost of Services	160,100	
		Work in Process*		160,100

* $28,000 + $14,600 + $52,500 + $40,000 + $25,000

b.

Office overhead incurred ($26,000 + $6,000)……	$32,000
Office overhead applied……	25,000
Underapplied overhead……	$ 7,000

c.

Fees earned……	$185,000
Cost of services*……	167,100
Gross profit……	$ 17,900

* $160,100 + $7,000. Assumes the over- or underapplied office overhead is closed to cost of services monthly.

Note to Instructors: The consultant fees and travel costs can be directly assigned to the case and thus are not treated as office overhead. Costs such as secretarial and administrative salaries and supplies would be part of office overhead incurred.

Ex. 17–18 (FIN MAN); Ex. 2–18 (MAN)

a.	Work in Process	711,000	
	Salaries Payable		711,000
b.	Work in Process	1,420,000	
	Accounts Payable		1,420,000
c.	Work in Process (70% × $1,420,000)	994,000	
	Agency Overhead		994,000
d.	Cost of Services	1,927,550	
	Work in Process		1,927,550

Cost of completed jobs, $1,927,550:

	Starks Bank	Finley Airlines
June 1 balance	$ 180,000	$ 54,000
June costs:		
Direct labor	126,000	56,250
Media	472,500	416,500
Overhead	330,750*	291,550**
Total costs	$1,109,250	$818,300

* 70% × $472,500

** 70% × $416,500

PROBLEMS

Prob. 17–1A (FIN MAN); Prob. 2–1A (MAN)

a.	Materials	528,000	
	Accounts Payable		528,000
b.	Work in Process	403,200	
	Factory Overhead	58,800	
	Materials		462,000
c.	Work in Process	468,800	
	Factory Overhead	76,400	
	Wages Payable		545,200
d.	Factory Overhead	123,400	
	Selling Expenses	195,500	
	Administrative Expenses	121,800	
	Accounts Payable		440,700
e.	Factory Overhead	24,360	
	Selling Expenses	20,600	
	Administrative Expenses	14,900	
	Prepaid Expenses		59,860
f.	Depreciation Expense—Office Building	70,500	
	Depreciation Expense—Office Equipment	36,120	
	Factory Overhead	24,360	
	Accumulated Depreciation—Buildings and Equipment		130,980
g.	Work in Process	300,400	
	Factory Overhead		300,400
h.	Finished Goods	840,000	
	Work in Process		840,000
i.	Cost of Goods Sold	740,000	
	Finished Goods		740,000

Prob. 17–2A (FIN MAN); Prob. 2–2A (MAN)

1. a.

Materials	39,300	
Accounts Payable		39,300

b.

Work in Process	66,380	
Factory Overhead	6,940	
Materials		36,020
Wages Payable		37,300

c.

Factory Overhead	7,500	
Accounts Payable		7,500

d.

Factory Overhead	2,640	
Accumulated Depreciation—Machinery and Equipment		2,640

e.

Work in Process	17,280	
Factory Overhead (288 hours × $60)		17,280

f.

Finished Goods	46,640	
Work in Process		46,640

Computation of cost of jobs finished:

Job	Direct Materials	Direct Labor	Factory Overhead	Total
No. 201……	$3,950	$3,700	$1,860	$ 9,510
No. 202……	4,830	5,000	2,760	12,590
No. 203……	3,200	2,500	2,160	7,860
No. 205……	6,800	7,000	2,880	16,680
Total……				$46,640

g.

Accounts Receivable	45,740	
Sales		45,740
Cost of Goods Sold	29,960	
Finished Goods		29,960

Computation of cost of jobs sold:

Job	
No. 201……	$ 9,510
No. 202……	12,590
No. 203……	7,860
Total……	$29,960

2.

Work in Process				Finished Goods			
(b)	66,380	(f)	46,640	(f)	46,640	(g)	29,960
(e)	17,280						
Bal.	37,020			Bal.	16,680		

3. Schedule of unfinished jobs:

Job	Direct Materials	Direct Labor	Factory Overhead	Total
No. 204	$10,800	$9,150	$5,760	$25,710
No. 206	5,000	4,450	1,860	11,310
Balance of Work in Process, January 30				$37,020

4. Schedule of completed jobs:

Job	Direct Materials	Direct Labor	Factory Overhead	Total
Finished Goods, January 30 (Job 205)	$6,800	$7,000	$2,880	$16,680

Prob. 17–3A (FIN MAN); Prob. 2–3A (MAN)

1. and 2.

JOB ORDER COST SHEET

Customer	John Jobs	Date	Sept. 3, 2014
Address	220 Apple Lane	Date wanted	Oct. 31, 2014
	Cupertino, CA	Date completed	Oct. 28, 2014
Item	Reupholster sofa and loveseat	Job. No.	

ESTIMATE

Direct Materials		Direct Labor		Summary	
	Amount		Amount		Amount
40 meters at $25	1,000	30 hours at $30	900	Direct materials	1,000
				Direct labor	900
				Factory overhead	540
Total	1,000	Total	900	Total cost	2,440

ACTUAL

Direct Materials			Direct Labor			Summary	
Mat. Req. No.	Descrip-tion	Amount	Time Ticket No.	Descrip-tion	Amount	Item	Amount
508	18 meters at $25	450	H40	14 hours at $30	420	Direct materials	1,075
						Direct labor	1,020
510	25 meters at $25	625	H43	20 hours at $30	600	Factory overhead	612
Total		1,075	Total		1,020	Total cost	2,707

Comments:

The direct materials cost exceeded the estimate by $75 because 3 meters of materials were spoiled. The direct labor cost exceeded the estimate by $120 because an additional 4 hours of labor were used by an inexperienced employee.

Prob. 17–4A (FIN MAN); Prob. 2–4A (MAN)

1. Supporting calculations:

Job. No.	Quantity	June 1 Work in Process	Direct Materials	Direct Labor	Factory Overhead	Total Cost	Unit Cost	Units Sold	Cost of Goods Sold
No. 201	550	$16,500	$ 55,000	$ 41,250	$ 57,750	$ 170,500	$310.00	440	$136,400
No. 202	1,100	44,000	93,500	71,500	100,100	309,100	281.00	880	247,280
No. 203	550		38,500	22,000	30,800	91,300		0	0
No. 204	660		82,500	69,300	97,020	248,820	377.00	570	214,890
No. 205	480		60,000	48,000	67,200	175,200	365.00	420	153,300
No. 206	380		22,000	12,400	17,360	51,760		0	0
Total	3,720	$60,500	$351,500	$264,450	$370,230	$1,046,680			$751,870

A. $395,500. Materials applied to production in June + indirect materials. ($351,500 + $44,000)

B. $60,500. From table above and problem.

C. $351,500. From table above.

D. $264,450. From table above.

E. $370,230. ($264,450 × 1.4) and from table above.

F. $903,620. ($170,500 + $309,100 + $248,820 + $175,200)

G. $751,870. From table above.

H. $65,550. Wages incurred less direct labor applied to production in June. ($330,000 – $264,450)

Prob. 17–4A (FIN MAN); Prob. 2–4A (MAN) (Concluded)

2. June 30 balances:

Materials……	$ 17,000		($82,500 + $330,000 – $395,500)
Work in Process*……	$143,060		($91,300 + $51,760, Job 203 & Job 206)
Finished Goods**……	$151,750		($903,620 – $751,870)
Factory Overhead……	$ 9,820	Dr.	underapplied ($33,000 + $65,550 + $44,000 + $237,500 – $370,230)

* or ($60,500 + $351,500 + $264,450 + $370,230 – $903,620)

**

Job. No.	Units in Inventory	Unit Cost	Total Cost
No. 201	110	$310.00	$ 34,100
No. 202	220	281.00	61,820
No. 204	90	377.00	33,930
No. 205	60	365.00	21,900
Total			$151,750

Prob. 17–5A (FIN MAN); Prob. 2–5A (MAN)

1.

GINOCERA INC. Income Statement For the Year Ended December 31, 2014			
Sales			$17,920,000
Cost of goods sold			10,864,000
Gross profit			$ 7,056,000
Selling expenses:			
Infomercial campaign	$2,000,000		
Promotional materials	3,600,000		
Shipping expenses	224,000		
Total selling expenses		$5,824,000	
Administrative expenses:			
Legal expenses		800,000	
Total operating expenses			6,624,000
Income from operations			$ 432,000

Supporting calculations:

Sales: 1,120,000 units × $16 = $17,920,000

Cost of goods sold: 1,120,000 units × $9.70 = $10,864,000

Manufacturing cost per unit (Knife):

Direct materials:		
Hardened Steel Blanks……	$4.00	
Wood (for handle)……	1.50	
Packaging……	0.50	
Total direct materials……		$6.00
Direct labor……		0.50
Factory overhead*……		3.20
Total manufacturing cost per knife……		$9.70

* $800 ÷ 250 knives per hour

Promotional materials: 60,000 stores × $60 = $3,600,000

Shipping expenses: 1,120,000 units × $0.20 = $224,000

2. Finished Goods balance, December 31, 2014:
(1,200,000 units – 1,120,000 units) × $9.70 = $776,000

Work in Process, December 31, 2014:
25,000 units × ($6.00 + $3.20) = $230,000

The materials, stamping, and factory overhead have already been applied to the 25,000 units. Only the direct assembly labor has yet to be applied for these units.

Prob. 17–1B (FIN MAN); Prob. 2–1B (MAN)

a.	Materials	770,000	
	Accounts Payable		770,000
b.	Work in Process	604,200	
	Factory Overhead	75,800	
	Materials		680,000
c.	Work in Process	574,000	
	Factory Overhead	182,000	
	Wages Payable		756,000
d.	Factory Overhead	245,000	
	Selling Expenses	171,500	
	Administrative Expenses	110,600	
	Accounts Payable		527,100
e.	Factory Overhead	24,500	
	Selling Expenses	28,420	
	Administrative Expenses	16,660	
	Prepaid Expenses		69,580
f.	Factory Overhead	49,500	
	Depreciation Expense—Office Equipment	61,800	
	Depreciation Expense—Office Building	14,900	
	Accumulated Depreciation—Buildings and Equipment		126,200
g.	Work in Process	568,500	
	Factory Overhead		568,500
h.	Finished Goods	1,500,000	
	Work in Process		1,500,000
i.	Cost of Goods Sold	1,375,000	
	Finished Goods		1,375,000

Prob. 17–2B (FIN MAN); Prob. 2–2B (MAN)

1. a.

Materials	147,000	
Accounts Payable		147,000

b.

Work in Process	262,490	
Factory Overhead	29,160	
Materials		139,110
Wages Payable		152,540

c.

Factory Overhead	6,000	
Accounts Payable		6,000

d.

Factory Overhead	4,100	
Accumulated Depreciation—Machinery and Equipment		4,100

e.

Work in Process	40,480	
Factory Overhead (1,012 hours × $40)		40,480

f.

Finished Goods	175,090	
Work in Process		175,090

Computation of cost of jobs finished:

Job	Direct Materials	Direct Labor	Factory Overhead	Total
No. 101……	$19,320	$19,500	$6,160	$ 44,980
No. 102……	23,100	28,140	6,400	57,640
No. 103……	13,440	14,000	5,040	32,480
No. 105……	18,050	15,540	6,400	39,990
Total……				$175,090

g.

Accounts Receivable	189,100	
Sales*		189,100

* $62,900 + $80,700 + $45,500

Cost of Goods Sold	142,610	
Finished Goods		142,610

Computation of cost of jobs sold:

Job	
No. 101……	$ 44,980
No. 102……	57,640
No. 105……	39,990
Total……	$142,610

2.

Work in Process				Finished Goods			
(b)	262,490	(f)	175,090	(f)	175,090	(g)	142,610
(e)	40,480						
Bal.	127,880			Bal.	32,480		

3. Schedule of unfinished jobs:

Job Materials	Direct Materials	Direct Labor	Factory Overhead	Total
No. 104.....	$38,200	$36,500	$9,520	$ 84,220
No. 106.....	18,000	18,700	6,960	43,660
Balance of Work in Process, April 30.....				$127,880

4. Schedule of completed jobs:

Job	Direct Materials	Direct Labor	Factory Overhead	Total
Finished Goods, April 30 (Job 103).....	$13,440	$14,000	$5,040	$32,480

Prob. 17–3B (FIN MAN); Prob. 2–3B (MAN)

1. and 2.

JOB ORDER COST SHEET

Customer	Steve Scully	Date	Jan. 21, 2014
Address	160 Soda Alley	Date wanted	March 3, 2014
	Purchase, NY	Date completed	March 1, 2014
Item	Reupholster sofa and loveseat	Job. No.	

ESTIMATE

Direct Materials		Direct Labor		Summary	
	Amount		Amount		Amount
22 meters at $20	440	14 hours at $25	350	Direct materials	440
				Direct labor	350
				Factory overhead	280
Total	440	Total	350	Total cost	1,070

ACTUAL

Direct Materials			Direct Labor			Summary	
Mat. Req. No.	Descrip-tion	Amount	Time Ticket No.	Descrip-tion	Amount	Item	Amount
400	10 meters at $20	200	H9	10 hours at $24	240	Direct materials	480
						Direct labor	480
403	14 meters at $20	280	H12	10 hours at $24	240	Factory overhead	384
Total		480	Total		480	Total cost	1,344

Comments:

The direct materials cost exceeded the estimate by $40 because 2 meters of materials were spoiled. The direct labor cost exceeded the estimate by $130 because an additional 6 hours of labor were used by an inexperienced employee who worked for $1 less per hour.

Prob. 17–4B (FIN MAN); Prob. 2–4B (MAN)

1. Supporting calculations:

Job. No.	Quantity	May 1 Work in Process	Direct Materials	Direct Labor	Factory Overhead	Total Cost	Unit Cost	Units Sold	Cost of Goods Sold
No. 101	330	$26,400	$ 82,500	$ 59,400	$ 29,700	$ 198,000	$600.00	264	$158,400
No. 102	380	46,000	105,400	72,600	36,300	260,300	$685.00	360	246,600
No. 103	500		132,000	110,000	55,000	297,000		0	0
No. 104	400		66,000	39,600	19,800	125,400	$313.50	384	120,384
No. 105	660		118,800	66,000	33,000	217,800	$330.00	530	174,900
No. 106	330		66,000	30,800	15,400	112,200		0	0
Total	2,600	$72,400	$570,700	$378,400	$189,200	$1,210,700			$700,284

A. **$586,100. Materials applied to production in May + indirect materials. ($570,700 + $15,400)**

B. **$72,400. From table above and problem.**

C. **$570,700. From table above.**

D. **$378,400. From table above.**

E. **$189,200. ($378,400 × 0.50) and from table above.**

F. **$801,500. ($198,000 + $260,300 + $125,400 + $217,800)**

G. **$700,284. From table above.**

H. **$17,600. Wages incurred less direct labor applied to production in May. ($396,000 – $378,400)**

Prob. 17–4B (FIN MAN); Prob. 2–4B (MAN) (Concluded)

2. May 31 balances:

Materials……	$ 19,500	($105,600 + $500,000 – $586,100)
Work in Process*……	$409,200	($297,000 + $112,200, Job 103 & Job 106)
Finished Goods**……	$101,216	($801,500 – $700,284)
Factory Overhead……	$ (7,300)	Cr. overapplied ($26,400 + $17,600 + $15,400 + $122,500 – $189,200)

* or ($72,400 + $570,700 + $378,400 + $189,200 – $801,500)

**

Job. No.	Units in Inventory	Unit Cost	Total Cost
Job 101	66	$600.00	$ 39,600
Job 102	20	685.00	13,700
Job 104	16	313.50	5,016
Job 105	130	330.00	42,900
Total			$101,216

Prob. 17–5B (FIN MAN); Prob. 2–5B (MAN)

1.

TECHNOLOGY ACCESSORIES INC. Income Statement For the Year Ended December 31, 2014		
Sales		$18,400,000
Cost of goods sold		11,914,000
Gross profit		$ 6,486,000
Selling expenses:		
Salespersons commissions	$3,680,000	
Advertising design	750,000	
Advertising expenses	1,400,000	
Total selling expenses		5,830,000
Income from operations		$ 656,000

Supporting calculations:

Sales: 460,000 units × $40 = $18,400,000

Cost of goods sold: 460,000 units × $25.90 = $11,914,000

Manufacturing cost per unit:

Direct materials:		
Leather	$10.00	
Velvet (for interior)	5.00	
Packaging	0.40	
Total direct materials		$15.40
Direct labor		0.50
Factory overhead cost*		10.00
Total manufacturing cost per unit		$25.90

* $1,250 ÷ 125 units per hour

Salespersons commissions: $18,400,000 × 20% = $3,680,000

2. Finished Goods balance, December 31, 2014:
(500,000 units – 460,000 units) × $25.90 = $1,036,000

Work in Process, December 31, 2014:
22,000 units × ($15.40 + $10.00) = $558,800

The materials, stitching, and factory overhead have already been applied to the 22,000 units. Only the direct assembly labor has yet to be applied for these units.

CASES & PROJECTS

CP 17–1 (FIN MAN); CP 2–1 (MAN)

Two or three trends seem apparent. Starting with the most obvious:

a. There appears to be a strong "Friday effect." The unit cost on Friday increases dramatically, then falls on Monday. Apparently, the workforce is preparing early for the weekend.

b. There also appears to be a general increasing trend in the unit cost. Every Friday effect is larger than the previous Friday. Much the same can be said about the other days of the week.

c. It's hard to tell, but there may also be a "within week" trend. The unit cost appears to increase gradually from Monday through Thursday, before jumping on Friday. At the very least, Mondays are the best operating days, while Fridays are the worst.

A number of further pieces of information should be requested.

a. First, it would be good to verify these trends with some other products. This trend is probably not product-related but related generally to the day of the week. This would mean that the trend should be apparent in the other products.

b. The data should be sorted by shift and by employee. It's possible that the effect is stronger on one shift than on another or that just a few employees are responsible for the effect. It may not be prevalent in the general population of workers.

c. The Friday–Monday phenomenon is likely related to the workforce, but the same cannot be said about the larger increasing trend over the four weeks. It could be caused by any number of factors. A good first look would be to isolate materials costs to see if these are contributors. How much of the effect is labor and how much is material should be verified. It's possible that the general increase in cost over time is the result of loss of machine tolerances. Thus, more and more material is being required to produce a unit of product.

d. Has there been any significant change in supervisors or crucial employees that may explain this effect?

e. Have prices increased gradually for the raw materials?

CP 17–2 (FIN MAN); CP 2–2 (MAN)

1. **The unit costs are influenced by both the price and quantity of inputs. On the price side, the cost of steel has dropped from $1,200 to $1,100 per ton. This is apparently the result of the purchasing manager's decision to reduce the cost of raw materials by going to a new vendor. No other input prices change. Some of the input quantities changed for the worse. Specifically:**

	Input Quantity per Unit	
	Job 206	Job 228
Steel input	2.10 tons[1]	2.60 tons[2]
Foundry labor	8.00 hours[3]	10.00 hours[4]
Welding labor	11.00 hours[5]	14.00 hours[6]

[1] 105 tons ÷ 50 units

[2] 195 tons ÷ 75 units

[3] 400 hours ÷ 50 units

[4] 750 hours ÷ 75 units

[5] 550 hours ÷ 50 units

[6] 1,050 hours ÷ 75 units

These numbers were determined by dividing the total input quantities by the number of units produced to discover the inputs per unit. The inputs for the components were unchanged between the two jobs.

2. **A possible reason for this deterioration in performance is related to the purchasing manager's decision to change vendors in order to secure a lower price per ton. The new vendor is apparently delivering a lower-quality steel product to the company. As a result, the foundry operation is having to spend more time forming the steel parts. Moreover, the increased steel tons per unit is likely to be caused by scrapping some of the formed parts. The scrapped parts would need to be replaced by additional steel inputs, which would have the effect of increasing the number of tons required to make a unit of product. The welding operators are also apparently having difficulty welding the lower-quality steel parts. As a result, longer welding time is required to assemble a completed unit.**

   Overall, management has learned that the drive for a lower raw materials price was a poor decision. The overall net result was higher costs from the additional waste caused by lower-quality steel.

CP 17–3 (FIN MAN); CP 2–3 (MAN)

1. **The engineer is concerned that direct labor is not related to overhead consumption because direct labor is a small part of the cost structure. Apparently, the company has replaced labor with expensive machine technology and support. This, of course, represents more factory overhead. Just because the direct labor is "designed out" of the product will not mean that this overhead will magically disappear. More likely, the direct labor hours should be replaced by machine-related factory overhead. Thus, the factory overhead goes up while the activity base (direct labor) goes down. Hence, the factory overhead rate will go up.**

2. **Since each direct labor hour now has $1,500 of factory overhead, small mistakes in the direct labor time estimates can have a large impact on the estimated cost of a product. This is very critical, since the company sets selling price by adding a profit to unit cost. If the company underestimates the direct labor content by a small amount, it will underestimate unit cost, causing the company to underbid and win the job. Unfortunately, the job will turn out to have less profitability than expected because the price is smaller than it should be. If the company overestimates the labor time, it will overbid the job. Thus, it will lose out to competitors who bid more accurately. This puts the company into a lose-lose situation when such small labor time errors have such large dollar impacts on the final cost estimate.**

3. **The engineer's concern is valid. The company should consider replacing its direct labor time activity base with one that more accurately reflects its present resources. If the company is now highly automated, then machine hours may be a much more reasonable activity base.**

CP 17–4 (FIN MAN); CP 2–4 (MAN)

1. **Todd should record the debits for factory wages as a debit to Work in Process. The factory wages are product costs that must be accumulated in the cost of producing the product. Eventually, these wage costs will become part of the finished goods inventory and the cost of goods sold when the gift items are sold. Likewise, the depreciation should be recorded as a debit to Factory Overhead. The overhead is then applied to production work in process. Like the wages, the depreciation will also eventually become part of the finished goods inventory and the cost of goods sold when the gift items are sold. Thus, both the wages and depreciation will end up on the income statement as part of the cost of goods sold, not as individual expenses. The reason is because the accountant wants to match revenues and costs. Costs that are accumulated in the manufacture of products do not become expenses until the items are sold. Until that time, the costs are capitalized as inventory. If these costs were expensed immediately, the period's income for the firm would be understated to the extent that there were any increases in the work in process or finished goods inventories.**

2. **Jeff would not be concerned about immediately expensing administrative wages and depreciation because the benefits received from these costs are not product costs. Instead, these costs benefit a period of time. Thus, these costs should be expensed during the period.**

CP 17–5 (FIN MAN); CP 2–5 (MAN)

1. Direct labor cost:

Total actual (applied) overhead, 2010–2014……	$ 4,200,000
Total direct labor cost, 2010–2014……	$21,000,000
Predetermined overhead rate	
($4,200,000 ÷ $21,000,000)……	20% of direct labor cost

Machine cost:

Total actual (applied) overhead, 2010–2014……	$ 4,200,000
Total machine hours, 2010–2014……	500,000 hours
Predetermined overhead rate	
($4,200,000 ÷ 500,000 hours)……	$8.40 per machine hour

CP 17–5 (FIN MAN); CP 2–5 (MAN) (Continued)

2.

	2014		2013		2012	
	Direct Labor Cost	Machine Hours	Direct Labor Cost	Machine Hours	Direct Labor Cost	Machine Hours
Actual overhead	$790,000	$790,000	$870,000	$870,000	$935,000	$935,000
Applied overhead	777,000	781,200	882,000	873,600	924,000	932,400
(Over-) underapplied overhead	$ 13,000	$ 8,800	$ (12,000)	$ (3,600)	$ 11,000	$ 2,600

	2011		2010	
	Direct Labor Cost	Machine Hours	Direct Labor Cost	Machine Hours
Actual overhead	$845,000	$845,000	$760,000	$760,000
Applied overhead	840,000	843,360	777,000	769,440
(Over-) underapplied overhead	$ 5,000	$ 1,640	$ (17,000)	$ (9,440)

CP 17–5 (FIN MAN); CP 2–5 (MAN) (Concluded)

3. **The best predetermined overhead rate is machine hours. Although the total overhead applied for each rate developed in part (1) is the same over the entire five-year period (as a result of the method by which the predetermined overhead rates were developed), the predetermined overhead rate based on machine hours yields the least fluctuations in the amounts of over- or underapplied overhead considered on a year-by-year basis. With the rate based on machine hours, the over- or underapplied overhead ranges from $9,440 overapplied to $8,800 underapplied. This fluctuation in the over- or underapplied overhead compares favorably with the fluctuation resulting from using the current overhead base of direct labor cost ($17,000 overapplied to $13,000 underapplied over the past five years).**