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CHAPTER 2

QUESTIONS

1. The two major objectives of materials control are (1) physical control or safeguarding the materials and (2) control of the investment in materials.

2. The controls established for safeguarding materials include limiting access to the materials area, segregating the duties of employees involved with materials, and assuring that materials records are being maintained accurately.

Limiting access involves placing inventories in storage areas that can be entered only by authorized personnel and restricting the release of any materials or finished goods to individuals who have properly authorized documents. Control procedures that limit access to work in process areas should be established within each department or production station.

The segregation of duties involves assigning different people to different functions. Employees assigned to purchasing should not also be assigned to receiving, storage, or recording functions, etc.

The accurate recording of purchases and issuances of materials facilitates comparing the recorded materials on hand to the actual materials on hand. If a substantial difference between the recorded and actual quantities is discovered, it can be quickly determined and investigated.

3. Management should consider production and working capital requirements along with alternative uses of available funds that might yield a greater return. Consideration should also be given to the cost of materials handling, storage, and insurance protection against fire, theft, and other casualty losses. In addition, the possibility of loss from damage, spoilage, and obsolescence should not be overlooked.

4. Order point is the time to place an order for additional material because the level of stock has reached a predetermined minimum established by management.

5. In order to determine an order point, the information available should include the:

(1) anticipated daily usage of the material,
(2) lead-time interval, and
(3) required safety stock.

The anticipated usage requirement should be founded upon the number of units expected to be completed daily and the quantity of material each completed unit will require.

The lead time interval involves the typical period of time required between placing the order and receiving the shipment.

The safety stock is the minimum stock on hand needed to prevent running out of stock due to errors in calculations of usage, delivery delays, poor quality of merchandise received, and so on.

6. The economic order quantity (EOQ) is the calculated size of an order that minimizes the total cost of ordering and carrying the inventory over a specified period of time. It is a function of the cost of placing an order, the number of units required annually, and the carrying cost per unit of inventory

7. The cost of placing an order, the number of units required annually, and the annual carrying cost per unit in inventory are the items needed to calculate the economic order quantity.

8. The cost of an order includes the salaries and wages of employees who purchase, receive, and inspect materials; the expenses incurred for telecommunications, postage, and forms; and the accounting and record keeping associated with inventories.

9. The carrying cost of materials inventory includes the cost of storage and handling; the amount of interest lost on alternative investments; the losses due to obsolescence, spoilage, and theft; the cost of insurance and property taxes; and the cost of maintaining accounting records and controls over the inventory.

10. The supply chain is the system that links a manufacturer with its suppliers. If the system is especially “lean”, in an effort to be cost efficient, it is quite possible that parts may not be available when needed due to work stoppages, strikes, or natural disasters.

11. a. Purchasing agent duties include:

(1) coordinating materials requirements with production to prevent delays in production due to inadequate materials supply on hand.

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(2) compiling and maintaining a vendor file from which materials can be promptly obtained at the best available prices. (*Note to Instructor:* You may take this opportunity to explain to the student that the "lowest" price may not always be the "best" price.) The purchasing agent should also consider the quantity to be ordered at one time to get a lower unit price, the quality of the material, the time lapse before delivery, the credit terms, and the reliability of the vendor.

(3) placing purchase orders for materials needed.

(4) supervising the purchase order process until materials are received.

b. The receiving clerk is responsible for supervising the receipt of incoming shipments. These duties include checking the quantity and quality of the goods received.

c. The storeroom keeper's usual duties include properly storing all materials received, issuing materials only when proper authorization is presented, and keeping the purchasing agent informed of the quantities on hand.

d. The production supervisor is responsible for maintaining production and for preparing or approving requisitions for the quantities and kinds of materials needed for current production.

12. A purchase requisition is used by the storeroom keeper to provide the purchasing agent with information concerning the materials to be ordered. A *purchase order* is a document completed by the purchasing agent and sent to a vendor to order the materials.

13. An enterprise resource planning (ERP) system is a sophisticated computer system that coordinates the sales and production scheduling functions with the purchase and control of materials.

14. Many manufacturing firms use forms somewhat similar to those shown in the text; however, most firms design forms to meet their specific requirements. These specially designed forms usually perform the same functions as those depicted in the text but may vary in appearance. For example, a purchase order will provide for recording all essential information to obtain materials from selected vendors, regardless of the design or format. Many firms now use enterprise resource planning systems to control materials and electronic data interchange to communicate with suppliers and expedite the receipt of orders which might eliminate the use of some forms.

15. The internal control procedures established for incoming shipments should provide the following safeguards:

a. A receiving report prepared by the receiving clerk authenticates the quantity of specific items ordered and verifies that they were received in good condition.

b. A copy of the receiving report should accompany the materials received when they are moved from the receiving area to the storeroom. As materials are placed in location, the storeroom keeper should review and substantiate the quantities received per the receiving report.

c. The cost and quantity of each item on the approved invoice are independently recorded in the materials ledger.

d. The total of the invoice is independently recorded in the purchases journal to be subsequently posted to the appropriate general ledger accounts.

e. The invoice for materials purchased should not be approved for payment until it is matched to the receiving report and purchase order and the following details are checked:

(1) The unit prices and materials descriptions on the invoice are compared with similar data on the purchase order.

(2) The extensions of unit prices and totals are verified.

(3) The terms of payment and any other charges are verified with the purchase order.

(4) The method of shipment and date of delivery are verified.

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16. The purpose of a debit-credit memorandum is to inform the vendor that an adjustment has been made to the vendor's account. The information on the memo includes the amount of the adjustment, the reason for the adjustment, and the type and quantity of materials involved.

17. The bill of materials is a file contained in an enterprise resource planning system that lists all of the materials and components that make up a finished product. When orders are received from customers, the bill of material is used to compute the quantities of materials required. This information is used to prepare lists for the storeroom clerk or trigger purchase requisitions.

18. A materials ledger is a subsidiary ledger in which individual accounts are kept for each item of material carried in stock. The materials account in the general ledger is the control account for the materials ledger.

19. a. First-in, first-out: It is assumed that materials issued are from the oldest materials in stock. They were the first purchased and are costed at the prices paid for these earliest purchases. The cost of the ending inventory will reflect the prices paid for the most recent purchases.

b. Last-in, first-out: It is assumed that materials issued are from the most recent stock. The last purchased will be the first used at the prices paid for these latest purchases. The ending inventory will be costed at the prices paid for the earliest purchases.

c. Weighted average: Under this method, no attempt is made to identify the materials issued as to the time of purchase. The average unit price of all materials in stock is maintained; therefore, materials issued are costed on a basis of average prices. Unit cost changes each time unit purchase prices change; therefore, ending inventory will be priced at the latest average cost.

20. In a period of rising prices, the LIFO method estimates the cost of goods sold using the materials purchased at the highest prices. Such costs, when matched to sales for the period are believed to more accurately reflect the gross margin earned. The lower income, resulting from the use of LIFO, means that a smaller amount of taxes will be paid than if some other method were used. Since LIFO leaves the earlier costs of purchases in inventory, the overall value of the materials on hand at the end of a period will be more conservatively stated than if FIFO were used. This lower valuation of materials inventory, which affects both the income statement and the balance sheet, may be an advantage or a disadvantage depending on the use made of the balance sheet. The lower valuation is an advantage when property taxes are assessed on the dollar amount of inventory on hand.

Many companies, when prices are rising, adopt LIFO to minimize the income tax effects and believe that in such economic trends the costs charged against sales more accurately depict reality.

21.

	Entries	Source of Data
a.	Debits in materials ledger to record materials purchased	Receiving report
b.	Credits in materials ledger to record materials requisitioned	Materials requisition form
c.	Debits in job cost ledger to record materials placed in process	Materials requisition form

22. In a just-in-time manufacturing system, materials are not received from suppliers until they are ready to be put into process. The work is not done in one department until the subsequent department is ready to work on it. This approach differs from a traditional manufacturing system where materials are ordered and stored well in advance of production, and departments stockpile partially completed units until the next department is ready for them.

23. A traditional "push" manufacturing system produces goods for inventory in the hope that the demand for these goods will then be created. In a JIT "pull" manufacturing system, the credo is "Don't make anything for anybody until they ask for it".

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24. Disadvantages of a "push" manufacturing system include: having too many dollars invested in inventory; defects not being detected because partially completed goods are inventoried rather than completed immediately; obsolete products due to the long lead time from start to finish.

25. The throughput time is the time that it takes a unit to make it through the production system, and it is computed by dividing the number of units in work in process by the number of units completed each day to obtain a measure in days. Velocity also measures the speed with which units are produced in the system, but in percentage terms relative to past production; for example, velocity increased by 50%.

26. Advantages of producing all units in a single cell include: fewer and shorter movements of materials; production in smaller lot sizes because other products do not have to be made in the same cell; more worker motivation and satisfaction due to the teamwork approach within the cell.

27. Critics of "backflush" costing argue that it is not consistent with GAAP because it does not accurately account for inventories. Proponents of "backflush" costing argue that Work in Process and Finished Goods are immaterial in a lean production environment and, therefore, their omission does not materially misstate the financial statements.

28. Six Sigma is a process improvement method that uses data gathering, analytical techniques, and customer feedback, and whose aim is to have no more than 3.4 defects per one million process occurrences. It is an important goal because the manufacture and sale of defective items is costly and tends to damage a company's reputation.

29. If the value of the scrap is high, an inventory file should be prepared showing the quantity and market value. If both quantity and market value are known, an inventory account should be debited while an account such as Scrap Revenue is credited. If the market value of the scrap is unknown, a journal entry cannot be made until the scrap is sold, at which time Cash (or Accounts Receivable) is debited and Scrap Revenue is credited.

30. *Spoiled work* represents products that are not first quality by the company's standards and have imperfections that will not be corrected. They are sold as irregular units, called *seconds*. *Defective work* also includes goods that are not first quality by the established standard but have imperfections that will be corrected, making them first-quality products.

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EXERCISES

E2-1

a. 500 lbs. × 7 days ..... 3,500 lbs.
Safety stock required 2,500
Order point..... 6,000 lbs.

b. 500 lbs. × 4 days ..... 2,000 lbs.

E2-2

a. $EOQ = \sqrt{\frac{2CN}{K}}$

$= \sqrt{\frac{2 \times \$72 \times 360{,}000}{\$4}}$

$= \sqrt{\frac{\$51{,}840{,}000}{\$4}}$

$= \sqrt{12{,}960{,}000}$

= 3,600 gallons

b. 360,000 gals. (annual usage) ÷ 3,600 gals. (per order) = 100 orders

Ordering cost: 100 orders @ $72 per order	$ 7,200
Carrying cost: (3,600 gals. ÷ 2) @ $4.00 per gals.....	7,200
Total order and carrying cost	$14,400

E2-3

a. $EOQ = \sqrt{\frac{2CN}{K}}$

$= \sqrt{\frac{2 \times \$40 \times 225{,}000}{\$2}}$

$= \sqrt{\frac{\$18{,}000{,}000}{\$2}}$

$= \sqrt{\$9{,}000{,}000}$

= 3,000 gallons

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E2-3 Concluded

b. 225,000 gals. (annual usage) ÷ 3,000 gals. (per order) = 75 orders

Ordering cost: 75 orders @ $40 per order	$3,000
Carrying cost: (3,000 gals. ÷ 2) @ $2.00 per gals.	3,000
Total order and carrying cost	$6,000

E2-4

Work in Process	68,000*	
Factory Overhead	4,800**	
Materials		72,800
To record materials used during the month of June.		

* $20,000 + $18,000 + $16,000 + $3,000 + $9,000 + $2,000
** $1,800 + $1,300 + $1,700

E2-5

a.	Materials	200,000	
	Accounts Payable		200,000
b.	Work in Process	175,000	
	Materials		175,000
c.	Factory Overhead	12,000	
	Materials		12,000
d.	Materials	2,500	
	Work in Process		2,500
e.	Accounts Payable	1,800	
	Materials		1,800
f.	Accounts Payable	165,000	
	Cash		165,000

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E2-6

FIFO method

	RECEIVED			ISSUED			BALANCE			
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price		Amount
8/1							1,250	250		312,500
8/8	1,000	275	275,000				1,250	250	}	
							1,000	275		587,500
8/15				1,250	250	312,500				
				550	275	151,250	450	275		123,750
8/24	1,000	285	285,000				450	275	}	
							1,000	285		408,750
8/27				450	275	123,750				
				750	285	213,750	250	285		71,250

Cost of materials used (issued): $801,250; Cost of 8/31 inventory: $71,250

LIFO method

	RECEIVED			ISSUED			BALANCE			
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price		Amount
8/1							1,250	250		312,500
8/8	1,000	275	275,000				1,250	250	}	
							1,000	275		587,500
8/15				800	250	200,000				
				1,000	275	275,000	450	250		112,500
8/24	1,000	285	285,000				450	250	}	
							1,000	285		397,500
8/27				200	250	50,000				
				1,000	285	285,000	250	250		62,500

Cost of materials used (issued): $810,000; Cost of 8/31 inventory: $62,500

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E2-6 Concluded

Weighted average method

	RECEIVED			ISSUED			BALANCE			
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price		Amount
8/1							1,250	250		312,500
8/8	1,000	275	275,000				2,250	261.111	[1]	587,500
8/15				1,800	261.111	470,000	450	261.111		117,500
8/24	1,000	285	285,000				1,450	277.586	[2]	402,500
8/27				1,200	277.586	333,103	250	277.586		69,397

Cost of materials used (issued): $803,103; Cost of 8/31 inventory: $69,397

1. 1,250 × 250 = 312,500
   1,000 × 275 = 275,000
   2,250 kg. 587,500 / 2,250 = $261.111 per kg.

2. 450 × 261.111 = 117,500
   1,000 × 285.000 = 285,000
   1,450 kg. 402,500 / 1,450 = $277.586 per kg.

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E2-7

First-in, first-out method

	RECEIVED			ISSUED			BALANCE		
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
7/1							1,000	4.00	4,000.00
7/3				250	4.00	1,000.00	750	4.00	3,000.00
7/5	500	4.50	2,250.00				750	4.00	
							500	4.50	5,250.00
7/6				150	4.00	600.00	600	4.00	
							500	4.50	4,650.00
7/10				110	4.00	440.00	490	4.00	
							500	4.50	4,210.00
7/11				(10)	4.00	(40.00)	500	4.00	
							500	4.50	4,250.00
7/15	500	5.00	2,500.00				500	4.00	
							500	4.50	
							500	5.00	6,750.00
7/20	(300)	5.00	(1,500.00)				500	4.00	
							500	4.50	
							200	5.00	5,250.00
7/26				500	4.00	2,000.00	400	4.50	
				100	4.50	450.00	200	5.00	2,800.00

Cost of materials used (issued): $4,450
Cost of 7/31 inventory: $2,800

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E2-8

Last-in, first-out method

	RECEIVED			ISSUED			BALANCE		
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
7/1							1,000	4.00	4,000.00
7/3				250	4.00	1,000.00	750	4.00	3,000.00
7/5	500	4.50	2,250.00				750	4.00	
							500	4.50	5,250.00
7/6				150	4.50	675.00	750	4.00	
							350	4.50	4,575.00
7/10				110	4.50	495.00	750	4.00	
							240	4.50	4,080.00
7/11				(10)	4.50	(45.00)	750	4.00	
							250	4.50	4,125.00
7/15	500	5.00	2,500.00				750	4.00	
							250	4.50	
							500	5.00	6,625.00
7/20	(300)	5.00	(1,500.00)				750	4.00	
							250	4.50	
							200	5.00	5,125.00
7/26				200	5.00	1,000.00			
				250	4.50	1,125.00			
				150	4.00	600.00	600	4.00	2,400.00

Cost of materials used (issued): $4,850
Cost of 7/31 inventory: $2,400

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E2-9

Weighted average method

	RECEIVED			ISSUED			BALANCE		
Date	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
7/1							1,000	4.00	4,000.00
7/3				250	4.00	1,000.00	750	4.00	3,000.00
7/5	500	4.50	2,250.00				1,250	[2]4.20	5,250.00
7/6				150	4.20	630.00	1,100	4.20	4,620.00
7/10				110	4.20	462.00	990	4.20	4,158.00
7/11				(10)	4.20	(42.00)	1,000	4.20	4,200.00
7/15	500	5.00	2,500.00				1,500	[3]4.4667	6,700.00
7/20	(300)	5.00[1]	(1,500.00)				1,200	[4]4.3333	5,200.00
7/26				600	4.3333	2,600.00	600	4.3333	2,600.00

Cost of materials used (issued): $4,650
Cost of 7/31 inventory: $2,600

1. Material will be returned to vendor at its original purchase cost
2. $750 \times 4.00 = 3{,}000$
   $\underline{500} \times 4.50 = \underline{2{,}250}$
   1,250 units 5,250/1,250 = 4.20

3. $1{,}000 \times 4.20 = 4{,}200$
   $\underline{500} \times 5.00 = \underline{2{,}500}$
   1,500 units 6,700/1,500 = 4.4667

4. $1{,}500 \times 4.4667 = 6{,}700$
   $\underline{(300)} \times 5.00 = \underline{(1{,}500)}$
   1,200 units 5,200/1,200 = 4.3333

E2-10

Inventory Method	Cost Transferred to Work in Process	Cost of Ending Inventory
FIFO	$4,450	$2,800
LIFO	4,850	2,400
Weighted average	4,650	2,600

In a period of constantly rising prices as illustrated in the problem, the LIFO method of inventory pricing will result in the highest cost being charged to cost of goods sold; the FIFO method will result in the lowest cost being charged to cost of goods sold; and the weighted average method will result in a cost between the other two. Theoretically, LIFO provides a better "matching of costs with revenue" because the inventory sold will have to be replaced at current prices. In a period of falling prices, the reverse will be true, with the weighted average method again falling in between the other two.

E2-11

a. The FIFO method, which results in the most recent purchases being costed in ending inventory, indicates that materials costs have continued to increase over the three-year period, given that the number of units in inventory did not change.

b. FIFO would show the highest net income for 2017. The information given indicates that prices rose during the year. Using FIFO, the cost of goods sold would be charged with the oldest materials costs, which during a time of rising prices would be the lowest materials costs.

c. LIFO would show the lowest net income for 2018, because it would continue to charge the latest and highest costs to cost of goods sold while the other two methods would be less affected by the rising cost of the more recent purchases.

d. FIFO would show the highest net income for the three years combined, because it consistently charges the earliest, lower costs to the product, thereby increasing the yearly net income.

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E2-12

a.	**1.**	Materials	23,750	
		Accounts Payable		23,750
	2.	Work in Process	19,250	
		Materials		19,250
	3.	Materials	1,200	
		Work in Process		1,200
	4.	Factory Overhead	2,975	
		Materials		2,975
	5.	Materials	385	
		Factory Overhead		385

b.

Materials			
Bal.	5,000	(2)	19,250
(1)	23,750	(4)	2,975
(3)	1,200		*22,225*
(5)	385		
	30,335		
8,110			

Factory Overhead			
(4)	2,975	(5)	385
	2,590		

Work in Process			
(2)	19,250	(3)	1,200
	18,050		

Accounts Payable			
		(1)	23,750

c. $8,110

E2-13

a.	**1.**	Materials	35,750	
		Accounts Payable		35,750
	2.	Work in Process	29,250	
		Materials		29,250
	3.	Materials	2,200	
		Work in Process		2,200
	4.	Factory Overhead	3,975	
		Materials		3,975
	5.	Materials	585	
		Factory Overhead		585

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E2-13 Concluded

b.

Materials			
Bal.	10,000	(2)	29,250
(1)	35,750	(4)	3,975
(3)	2,200		*33,225*
(5)	585		
	48,535		
15,310			

Factory Overhead			
(4)	3,975	(5)	585
	3,390		

Work in Process			
(2)	29,250	(3)	2,200
27,050			

Accounts Payable			
		(1)	35,750

c. $15,310

E2-14

1. 25,000/5,000 = 5 days

2. 25,000 – (25,000 × 0.50) = 12,500
12,500/5,000 = 2.5 days

3. a. 0.15 × $500,000 = $75,000

b. 0.15 × (0.5 × $500,000) = $37,500

E2-15

a.	Raw and In-Process	80,000	
	Accounts Payable		80,000
b.	No entry.		
c.	Conversion Costs	10,000	
	Payroll		10,000
d.	Conversion Costs	60,000	
	Various Credits		60,000
e.	Finished Goods	150,000	
	Raw and In-Process		80,000
	Conversion Costs		70,000

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E2-15 Concluded

f.	Accounts Receivable	225,000	
	Sales		225,000
	Cost of Goods Sold.....	150,000	
	Finished Goods.....		150,000

E2-16

e. No entry

f.	Cost of Goods Sold.....	150,000	
	Raw and In-Process.....		80,000
	Conversion Costs.....		70,000

E2-17

a.	Raw and In-Process.....	70,000	
	Accounts Payable		70,000

b. No entry.

c.	Conversion Costs	15,000	
	Payroll.....		15,000
d.	Conversion Costs	45,000	
	Various Credits		45,000
e.	Finished Goods.....	130,000	
	Raw and In-Process.....		70,000
	Conversion Costs.....		60,000
f.	Accounts Receivable	195,000	
	Sales		195,000
	Cost of Goods Sold.....	130,000	
	Finished Goods.....		130,000

E2-18

e. No entry

f.	Cost of Goods Sold.....	130,000	
	Raw and In-Process.....		70,000
	Conversion Costs.....		60,000

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E2-19

a.	Scrap Materials	125	
	Factory Overhead (Scrap)		125
	Cash	125	
	Scrap Materials		125
b.	No entry at the time scrap is identified		
	At the time of sale:		
	Cash	75	
	Factory Overhead (Scrap)		75
c.	No entry at the time scrap is identified		
	At the time of sale:		
	Accounts Receivable	85	
	Work in Process		85
d.	No entry at the time scrap is identified		
	At the time of sale:		
	Cash	40	
	Scrap Revenue		40

E2-20

a.	Work in Process	108,000	
	Materials		36,000
	Payroll		48,000
	Factory Overhead		24,000
	Spoiled Goods Inventory	995	
	Factory Overhead (Loss Due to Spoiled Work)	355*	
	Work in Process		1,350

*Unit cost of completed work:

$108,000 ÷ 8,000 skirts	$13.50
Sale of spoiled work as seconds	9.95
Loss due to spoiled work	$ 3.55

100 units × $3.55 = $355

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E2-20 Concluded

b.	Work in Process	108,000	
	Materials		36,000
	Payroll		48,000
	Factory Overhead		24,000
	Spoiled Goods Inventory	995	
	Work in Process		995

E2-21

a.	Factory Overhead (Loss Due to Defective Work)	300	
	Materials		150
	Payroll		100
	Factory Overhead		50
b.	Work in Process	300	
	Materials		150
	Payroll		100
	Factory Overhead		50

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PROBLEMS

P2-1

1. Order Point = Expected Usage During Lead Time + Safety Stock
= (200 units per day × 5 days) + 500 units
= 1,500 units

2. EOQ = $\sqrt{\frac{2\,CN}{K}}$

= $\sqrt{\frac{2 \times \$50 \times 25{,}000}{\$.10}}$

= $\sqrt{25{,}000{,}000}$

= 5,000 units

3. 25,000 units (annual usage) ÷ 5,000 units (per order) = 5 orders
Ordering cost: 5 orders @ $50 per order = $250

Average number of units in inventory = (1/2 × EOQ) + Safety Stock
= (1/2 × 5,000) + 500
= 3,000

Carrying Cost = Average Inventory × Carrying Cost per Unit
= 3,000 × $.10 = $300

Total Cost = Order Costs + Carrying Costs
= $250 + $300 = $550

(Note that when there is safety stock, the carrying cost does not equal the order cost at the EOQ.)

P2-2

1. Order Point = Expected Usage During Lead Time + Safety Stock
= (500 units per day × 5 days) + 1,500 units
= 4,000 units

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P2-2 Concluded

2. EOQ $= \sqrt{\frac{2CN}{K}}$

$= \sqrt{\frac{2 \times \$194.45 \times 63{,}000}{\$.50}}$

$= \sqrt{49{,}001{,}400}$

$=$ 7,000 units (rounded)

3. 63,000 units (annual usage) ÷ 7,000 units (per order) = 9 orders

Ordering cost: 9 orders @ $194.45 per order = $1,750 (rounded)

Average number of units in inventory = (1/2 × EOQ) + Safety Stock

= (1/2 × 7,000) + 1,500

= 5,000

Carrying Cost	=	Average Inventory	×	Carrying Cost per Unit		
	=	5,000	×	$.50	=	$2,500
Total Cost	=	Order Costs	+	Carrying Costs		
	=	$1,750	+	$2,500	=	$4,250

(Note that when there is safety stock, the carrying cost does not equal the order cost at the EOQ.)

P2-3

Order Size[1]	Number of Orders[2]	Order Cost[3]	Avg Inv[4]	Carrying Cost[5]	Order & C. C.[6]
300	67	$1,340	150	$ 750	$2,090
400	**50**	**1,000**	**200**	**1,000**	**2,000**
500	40	800	250	1,250	2,050
600	34	680	300	1,500	2,180
700	29	580	350	1,750	2,330
800	25	500	400	2,000	2,500

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P2-3 Concluded

2. Annual requirement of 20,000 gallons divided by order size in column 1.

3. Number of orders $\times$ $20 cost per order.

4. Order size in column 1 divided by 2.

5. Average inventory in column 4 $\times$ $5 per gallon carrying cost.

6. Total order cost in column 3 + total carrying cost in column 5.

P2-4

1. Average number of gals. In inventory = (1/2 $\times$ EOQ) + Safety Stock

= (1/2 $\times$ 400) + 500 = 700 gals.

2. Carrying costs = Average inventory $\times$ Carrying Cost per Unit

= 700 gals. $\times$ $5 = $3,500

3. Since the EOQ does not change, the number of orders (50) does not change; therefore, the total order cost is still $1,000 (or 50 $\times$ $20).

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P 2-5

1. a. FIFO costing

MATERIALS LEDGER

Description Rubber gaskets — Materials Ledger Account No. 11216

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
11/1									30,000	3.00	90,000.00
11/4	112	10,000	3.10	31,000.00					30,000	3.00	
									10,000	3.10	121,000.00
11/5					49	30,000	3.00	90,000.00	10,000	3.10	31,000.00
11/8	113	50,000	3.30	165,000.00					10,000	3.10	
									50,000	3.30	196,000.00
11/15					50	10,000	3.10				
						10,000	3.30	64,000.00	40,000	3.30	132,000.00
11/22	114	25,000	3.50	87,500.00					40,000	3.30	
									25,000	3.50	219,500.00
11/28					51	30,000	3.30	99,000.00	10,000	3.30	
									25,000	3.50	120,500.00

P2-5 Continued

b. LIFO costing

MATERIALS LEDGER

Description Rubber gaskets **Materials Ledger Account No.** 11216

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
11/1									30,000	3.00	90,000.00
11/4	112	10,000	3.10	31,000.00					30,000	3.00	
									10,000	3.10	121,000.00
11/5					49	10,000	3.10				
						20,000	3.00	91,000.00	10,000	3.00	30,000.00
11/8	113	50,000	3.30	165,000.00					10,000	3.00	
									50,000	3.30	195,000.00
11/15					50	20,000	3.30	66,000.00	10,000	3.00	
									30,000	3.30	129,000.00
11/22	114	25,000	3.50	87,500.00					10,000	3.00	
									30,000	3.30	
									25,000	3.50	216,500.00
11/28					51	25,000	3.50				
						5,000	3.30	104,000.00	10,000	3.00	
									25,000	3.30	112,500.00

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P2-5 Continued

c. Weighted average costing

MATERIALS LEDGER

Description Rubber gaskets **Materials Ledger Account No.** 11216

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
11/1									30,000	3.00	90,000.00
11/4	112	10,000	3.10	31,000.00					40,000	3.025[1]	121,000.00
11/5					49	30,000	3.025	90,750.00	10,000	3.025	30,250.00
11/8	113	50,000	3.30	165,000.00					60,000	3.25417[2]	195,250.00
11/15					50	20,000	3.25417	65,083.40	40,000	3.25417	130,166.60
11/22	114	25,000	3.50	87,500.00					65,000	3.34872[3]	217,666.60
11/28					51	30,000	3.34872	100,461.60	35,000	3.34872	117,205.00

1. $30,000 \times 3.00 = 90,000$
   $10,000 \times 3.10 = 31,000$
   40,000 units 121,000/40,000 = 3.025

2. $10,000 \times 3.025 = 30,250$
   $50,000 \times 3.300 = 165,000$
   60,000 units 195,250/60,000 = 3.25417

3. $40,000 \times 3.25417 = 130,166.80$
   $25,000 \times 3.50000 = 87,500.00$
   65,000 units 217,666.80/65,000 = 3.34872

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P2-5 Concluded

2.

Inventory Method	Cost Transferred to Work in Process	Cost of Ending Inventory
FIFO.....	$253,000	$120,500
LIFO.....	261,000	112,500
Weighted average.....	256,295	117,205

3. Probably LIFO because it will come closer to matching current costs with current revenues. When costs are rising, revenues are usually increasing; therefore, the resulting gross profit under LIFO will reflect the company's product profitability more accurately. Other inventory factors that should be given consideration in selecting any method are: the dollar amount of the inventories; the magnitude of the price changes; the direction of the price changes, whether rising or falling; and the length of the inventory cycle. Also, adopting LIFO in periods of rising prices will result in the minimization of income taxes.

4. In a period of rising prices, the balance sheet inventory under either method will most likely be less than the current market prices. However, as shown by the problem, the lowest figure for ending inventory will be reported when LIFO is used. LIFO charges the higher materials cost to Cost of Goods Sold whereas FIFO defers more of the higher cost to the inventory on hand.

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P2-6

1. FIFO method

MATERIALS LEDGER

Description Plastic tubing (ft.) **Materials Ledger Account No.** 906

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
2/1									1,200	2.76	3,312.00
2/5					108	60	2.76	165.60	1,140	2.76	3,146.40
2/11					210	200	2.76	552.00	940	2.76	2,594.40
2/14	634	800	2.80	2,240.00					940	2.76	
									800	2.80	4,834.40
2/15					274	400	2.76	1,104.00	540	2.76	
									800	2.80	3,730.40
2/16	Ret.	(90)	2.80	(252.00)					540	2.76	
									710	2.80	3,478.40
2/18	712	1,000	2.83	2,830.00					540	2.76	
									710	2.80	
									1,000	2.83	6,308.40
2/21					318	540	2.76	1,490.40			
						100	2.80	280.00	610	2.80	
									1,000	2.83	4,538.00

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P2-6 Continued

2. LIFO method

MATERIALS LEDGER

Description Plastic tubing (ft.) **Materials Ledger Account No.** 906

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
2/1									1,200	2.76	3,312.00
2/5					108	60	2.76	165.60	1,140	2.76	3,146.40
2/11					210	200	2.76	552.00	940	2.76	2,594.40
2/14	634	800	2.80	2,240.00					940	2.76	
									800	2.80	4,834.40
2/15					274	400	2.80	1,120.00	940	2.76	
									400	2.80	3,714.40
2/16	Ret.	(90)	2.80	(252.00)					940	2.76	
									310	2.80	3,462.40
2/18	712	1,000	2.83	2,830.00					940	2.76	
									310	2.80	
									1,000	2.83	6,292.40
2/21					318	640	2.83	1,811.20	940	2.76	
									310	2.80	
									360	2.83	4,481.20

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P2-6 Concluded

3. Weighted average method

MATERIALS LEDGER

Description Plastic tubing (ft.) **Materials Ledger Account No.** 906

	RECEIVED				ISSUED				BALANCE		
Date	Rec. Rep. No.	Quantity	Unit Price	Amount	Mat. Req. No.	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
2/1									1,200	2.76	3,312.00
2/5					108	60	2.76	165.60	1,140	2.76	3,146.40
2/11					210	200	2.76	552.00	940	2.76	2,594.40
2/14	634	800	2.80	2,240.00					1,740	2.7784[1]	4,834.40
2/15					274	400	2.7784	1,111.36	1,340	2.7784	3,723.04
2/16	Ret.	(90)	2.80	(252.00)					1,250	2.7768[2]	3,471.04
2/18	712	1,000	2.83	2,830.00					2,250	2.8005[3]	6,301.04
2/21					318	640	2.8005	1,792.32	1,610	2.8005	4,508.72

1. $940 \times 2.76 = 2{,}594.40$
   $800 \times 2.80 = 2{,}240.00$
   1,740 units 4,834.40/1,740 = 2.7784

2. $1{,}340 \times 2.7784 = 3{,}723.04$
   $(90) \times 2.8000 = (252.00)$
   1,250 units 3,471.04/1,250 = 2.7768

3. $1{,}250 \times 2.7768 = 3{,}471.04$
   $1{,}000 \times 2.8300 = 2{,}830.00$
   2,250 units 6,301.04/2,250 = 2.8005

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P2-7

1.

a.	Materials	74,000	
	Accounts Payable		74,000
b.	Work in Process	57,000	
	Factory Overhead	11,000	
	Materials		68,000
c.	Materials	1,100	
	Work in Process		1,100
d.	Accounts Payable	2,500	
	Materials		2,500
e.	Accounts Payable	68,500	
	Cash		68,500

2.

Cash

Bal.	82,250	(e)	68,500
	13,750		

Accounts Payable

(d)	2,500	Bal.	21,000
(e)	68,500	(a)	74,000
	71,000		*95,000*
			24,000

Materials

Bal.	29,500	(b)	68,000
(a)	74,000	(d)	2,500
(c)	1,100		*70,500*
	104,600		
	34,100		

Factory Overhead

(b)	11,000		

Work in Process

Bal.	27,000	(c)	1,100
(b)	57,000		
	84,000		
	82,900		

3.

a.	Cash		$ 13,750
b.	Materials		34,100
c.	Accounts payable		24,000

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P2-8

1.

a.	Materials	58,000	
	Accounts Payable		58,000
b.	Work in Process	45,000	
	Factory Overhead	8,000	
	Materials		53,000
c.	Materials	900	
	Work in Process		900
d.	Accounts Payable	1,500	
	Materials		1,500
e.	Accounts Payable	51,500	
	Cash		51,500

2.

Cash

Bal.	64,250	(e)	51,500
	12,750		

Accounts Payable

(d)	1,500	Bal.	29,000
(e)	51,500	(a)	58,000
	53,000		*87,000*
			34,000

Materials

Bal.	23,500	(b)	53,000
(a)	58,000	(d)	1,500
(c)	900		*54,500*
	82,400		
	27,900		

Factory Overhead

(b)	8,000		

Work in Process

Bal.	31,000	(c)	900
(b)	45,000		
	76,000		
	75,100		

3.

a.	Cash	$	12,750
b.	Materials		27,900
c.	Accounts payable		34,000

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P2-9

1. and **2.**

a. The company purchased materials costing $22,000. (Forms used: receiving report and vendor's invoice.)

b. The storeroom issued direct materials to the factory in the amount of $19,000. (Form used: materials requisitions.)

c. The direct labor cost was $17,000.

d. Factory overhead in the amount of $12,000 was charged to jobs in process.

e. Jobs having a total cost of $47,500 were completed in the factory and transferred to the finished goods storeroom.

f. Total cost of goods sold during the month was $55,000.

3. Ending Inventories:

Materials	$10,000
Work in Process	4,100
Finished Goods	4,150

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P2-10

1.

	a.	b.	c.	d.
Date	**Form**	**Journal Entry**	**Book of Original Entry**	**Subsidiary Ledger**
Mar. 31	Purchase Requisition (for 1,800 aluminum sheets)	None	None	None
Apr. 1	Purchase Order	None	None	Materials Ledger (if "On Order" column is used)
Apr. 6	Receiving Report Vendor's Invoice	Materials…….…….. 42,500 Accounts Payable……..……..42,500 (1,700 sheets @ $25)	Purchases Journal	Materials Ledger
Apr. 11	Receiving Report Vendor's Invoice	Materials…….…….. 2,500 Accounts Payable ……..……..…..2,500 (100 sheets @ $25)	Purchases Journal	Materials Ledger
Apr. 16	Approved Invoice	Accounts Payable……..42,500 Cash ……..……..……..……...41,650 Purchases Discount……..…….. 850	Cash Payments Journal	None

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P2-10 Concluded

	a.	b.	c.	d.
Date	**Form Used**	**Journal Entry**	**Book of Original Entry Used**	**Subsidiary Records Affected**
Apr. 30	Materials Requisition	Work in Process…… 46,500 Materials…… 46,500 500 X $23 = $11,500 500 x $23 = $11,500 1,400 x $25 = 34,500 $46,500	General Journal	Materials Ledger Job Cost Ledger
Apr. 30	Returned Materials Report	Materials……. 500 Work in Process……. 500 (20 sheets @ $25)	General Journal	Materials Ledger Job Cost Ledger
Apr. 30	Inventory Report	Factory Overhead (Inventory Short and Over)…. 550 Materials…….. 550 (22 sheets* @ $25) *420 unused sheets - 398 sheets on hand	General Journal	Stores Ledger Factory Overhead Ledger

*Beg. Bal. 500 + purchased 1,800 – requisitioned 1,900 + returned 20 = 420

2.

500 x $23 = $11,500
1,380 x $25 = 34,500
$46,000

a. $9,950 (398 × $25) **b.** $46,000 ($46,500 - $500) (See above.)

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P2-11

1. 200,000/50,000 = 4 days
2. 25% × $1,000,000 = $250,000
3. [(200,000 × (1 -0.50)]/50,000 = 2 days
4. By reducing the average work in process by 50% while keeping the daily production constant, the velocity of production doubled.
5. 25% × (1/2 × $1,000,000) = $125,000
6. The cost of carrying inventory has been reduced by 50%.

P2-12

1.

a.	Raw and In-Process	150,000	
	Accounts Payable		150,000
b.	No entry		
c.	Conversion Costs	25,000	
	Payroll		25,000
d.	Conversion Costs	100,000	
	Various Credits		100,000
e.	Finished Goods	275,000	
	Raw and In-Process		150,000
	Conversion Costs		125,000
f.	Accounts Receivable	400,000	
	Sales		400,000
	Cost of Goods Sold	275,000	
	Finished Goods		275,000

2.

e.	No entry		
f.	Cost of Goods Sold	275,000	
	Raw and In-Process		150,000
	Conversion Costs		125,000

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P2-13

1.

a.	Raw and In-Process	135,000	
	Accounts Payable		135,000
b.	No entry		
c.	Conversion Costs	20,000	
	Payroll		20,000
d.	Conversion Costs	80,000	
	Various Credits		80,000
e.	Finished Goods	235,000	
	Raw and In-Process		135,000
	Conversion Costs		100,000
f.	Accounts Receivable	355,000	
	Sales		355,000
	Cost of Goods Sold	235,000	
	Finished Goods		235,000

2.

e.	No entry		
f.	Cost of Goods Sold	235,000	
	Raw and In-Process		135,000
	Conversion Costs		100,000

P2-14

a.	Factory Overhead (Inventory Over and Short)	26	
	Materials		26
	To adjust materials account to physical inventory count: (10,000 – 9,950) × $.52 = $26		
b.	Materials	775	
	Work in Process		775
c.	Work in Process	770	
	Factory Overhead (Repairs and Maintenance)		770
d.	Accounts Payable	234	
	Materials		234

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P 2-14 Concluded

e.	Sales Returns and Allowances	5,000	
	Accounts Receivable		5,000
	Finished Goods	2,500	
	Cost of Goods Sold		2,500
f.	Work in Process	20,200	
	Factory Overhead (Supplies)	2,100	
	Materials		22,300
g.	Materials	25,685	
	Accounts Payable		25,685
h.	Materials	950	
	Work in Process		950
i.	Scrap Materials	685	
	Factory Overhead		685
j.	Spoiled Goods	60	
	Work in Process		60
k.	Cash	685	
	Scrap Materials		685

P2-15

1.

a.	Work in Process	7,500	
	Materials		3,500
	Payroll		1,500
	Factory Overhead		2,500
b.	Spoiled Goods (6 × $50)	300	
	Factory Overhead (Loss Due to Spoiled Goods)	150	
	Work in Process (6 × $75)		450
c.	Cash	300	
	Spoiled Goods		300

2.

a. Same as **1a** above.

b.	Spoiled Goods	300	
	Work in Process		300

c. Same as **1c** above.

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P2-16

1.	Spoiled Goods Inventory (18 × $75)	1,350	
	Work in Process		1,350
2.	Work in Process	4,350	
	Materials		1,650
	Payroll		1,500
	Factory Overhead		1,200
3.	Work in Process (18 × $300)	5,400	
	Materials (18 × $117)		2,106
	Payroll (18 × $100)		1,800
	Factory Overhead (18 × $83)		1,494
4.	Cash	1,350	
	Spoiled Goods Inventory		1,350

5. NOTE: You may want students to read the Differential Cost Analysis section of Ch. 10 before attempting Part 5 of this problem. Alternatively, you may wish to challenge them with Part 5 to see if they can determine the relevant items to this decision without first teaching them the concept.

The cost of reconditioning the 15 defective motors is $4,350 or $290 each. Lloyd would be better off reconditioning the motors and selling them for $400 for a gain of $110 per unit versus selling them as is for $75 each.

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REVIEW PROBLEM FOR CHAPTERS 1 & 2

P2-17R

1. and **3.**

Cash

Bal.	12,000	(b)	1,000
(e)	72,500	(g)	32,800
	84,500	(j)	6,000
6,950		(k)	2,000
		(l)	33,750
		(n)	2,000
			77,550

Accounts Receivable

(d)	126,375	(e)	72,500
53,875			

Finished Goods

(q)	98,290	(r)	84,250
14,040			

Work in Process

Bal.	35,000	(q)	98,290
(a)	28,000		
(f)	54,340		
(p)	11,950		
	129,290		
31,000			

Materials

Bal.	51,000	(f)	54,340
(b)	1,000	(h)	650
(c)	22,000		*54,990*
	74,000		
19,010			

Prepaid Insurance

Bal.	3,000	(m)	400
2,600			

Machinery

Bal.	125,000		

Accum. Depr./Machinery

		Bal.	10,500
		(o)	1,200
			11,700

Office Equipment

Bal.	30,000		

Accum. Depr./Office Equipment

		Bal.	4,800
		(o)	400
			5,200

Office Furniture

Bal.	20,000		

Accum. Depr./Office Furniture

		Bal.	2,500
		(o)	180
			2,680

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P2-17R Continued

Accounts Payable

(l)	33,750	Bal.	30,000
		(c)	22,000
		(i)	3,000
			55,000
		21,250	

Capital Stock

		Bal.	182,200

Retained Earnings

		Bal.	46,000

Sales

		(d)	126,375

Cost of Goods Sold

(r)	84,250		

Payroll

(g)	32,800	(a)	32,800

Factory Overhead

(a)	4,800	(p)	11,950
(h)	650		
(i)	3,000		
(m)	300		
(n)	2,000		
(o)	1,200		
	11,950		

Selling and Admin. Expense

(j)	6,000		
(k)	2,000		
(m)	100		
(o)	580		
	8,680		

2.

a.	Work in Process	28,000	
	Factory Overhead	4,800	
	Payroll		32,800
b.	Materials	1,000	
	Cash		1,000
c.	Materials	22,000	
	Accounts Payable		22,000
d.	Accounts Receivable	126,375	
	Sales		126,375
e.	Cash	72,500	
	Accounts Receivable		72,500

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P2-17R Continued

f.	Work in Process					54,340	
	Materials						54,340
	Chain:						
	12,000 lbs.	@	$2.00	$24,000			
	2,000 lbs.	@	$2.20	4,400	28,400		
	Pulleys:						
	4,000 sets	@	$5.00	$20,000			
	400 sets	@	$5.10	2,040	22,040		
	Bolts and taps:						
	4,000 lbs.	@	$ .50		2,000		
	Steel plates:						
	3,800 units	@	$ .50		1,900		
					$ 54,340		
g.	Payroll					32,800	
	Cash						32,800
h.	Factory Overhead					650	
	Materials						650
i.	Factory Overhead					3,000	
	Accounts Payable						3,000
j.	Selling and Administrative Expense (Salaries)					6,000	
	Cash						6,000
k.	Selling and Administrative Expense (Advertising)					2,000	
	Cash						2,000
l.	Accounts Payable					33,750	
	Cash						33,750
m.	Selling and Administrative Expense (Insurance)					100	
	Factory Overhead					300	
	Prepaid Insurance						400

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P2-17R Continued

n.	Factory Overhead	2,000	
	Cash		2,000
o.	Selling and Administrative Expense (Depreciation of Office Equipment and Office Furniture)	580	
	Factory Overhead	1,200	
	Accumulated Depreciation/Office Equipment		400
	Accumulated Depreciation/Office Furniture		180
	Accumulated Depreciation/Machinery		1,200
p.	Work in Process	11,950	
	Factory Overhead		11,950
q.	Finished Goods	98,290	
	Work in Process		98,290
	(Beg. Bal. $35,000 + Dir. Labor $28,000 + Dir. Materials $54,340 + Factory OH 11,950 – End. Bal. $31,000)		
r.	Cost of Goods Sold	84,250	
	Finished Goods		84,250

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P2-17R Continued

4.

UltraLift Corp.
Statement of Cost of Goods Manufactured
For the Month Ended October 31, 20—

Materials:		
Inventory, October 1	$51,000	
Purchases	23,000	
Total cost of available materials	$74,000	
Less inventory, October 31	19,010	
Cost of materials used	$54,990	
Less indirect materials used	650	
Cost of materials used in production		$ 54,340
Direct labor		28,000
Factory overhead		11,950
Total manufacturing costs		$ 94,290
Add work in process inventory, October 1		35,000
		$ 129,290
Less work in process inventory, October 31		31,000
Cost of goods manufactured		$ 98,290

5.

UltraLift Corp.
Income Statement
For the Month Ended October 31, 20—

Net sales		$ 126,375
Cost of goods sold:		
Finished goods inventory, October 1	0	
Add cost of goods manufactured (see statement)	$98,290	
Goods available for sale	$98,290	
Less finished goods inventory, October 31	14,040	
Cost of goods sold		84,250
Gross profit on sales		$ 42,125
Selling and administrative expenses		8,680
Net income		$ 33,445

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P2-17R Concluded

6.

UltraLift Corp.
Balance Sheet
October 31, 20—

Assets			
Current assets:			
Cash			$ 6,950
Accounts receivable			53,875
Inventories:			
Finished goods		$ 14,040	
Work in process		31,000	
Materials		19,010	64,050
Prepaid insurance			2,600
Total current assets			$127,475
Plant and equipment:			
Machinery	$ 125,000		
Less accumulated depreciation	11,700	$113,300	
Office equipment	$ 30,000		
Less accumulated depreciation	5,200	24,800	
Office furniture	$ 20,000		
Less accumulated depreciation	2,680	17,320	
Total plant and equipment			155,420
Total assets			$282,895
Liabilities			
Current liabilities:			
Accounts payable			$ 21,250
Stockholders' Equity			
Capital stock		$182,200	
Retained earnings, October 1	$ 46,000		
Net income for October	33,445		
Retained earnings, October 31		79,445	
Total stockholders' equity			261,645
Total liabilities and stockholders' equity			$282,895

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MINI-CASE 1

1. Savings from implementing JIT:

Reduction in rework costs ($300,000 × 25%)……	$ 75,000
Reduction in storage and handling ($250,000 × 40%)…..	100,000
Savings in carrying costs (300,000 × $.35)……	105,000
Total savings……	$280,000
Less: Increase in changeover costs……	200,000
Net advantage of JIT……..	$ 80,000

2. Non-financial advantages:
   - Anticipated improvement in product quality
   - Frees up factory space for other uses.

Non-financial disadvantages:
- Interruptions in materials supply or strike by their own workers resulting in lost sales.
- Difficulty of workers to master JIT processes.

MINI-CASE 2

1. Inventory carrying costs such as storage space for raw materials, security, insurance, and spoilage and obsolesence should be reduced by a JIT system. Also, a JIT system can reduce nonvalue-added production activities such as moving materials and work in process, storage of work in process and finished goods, and inspection of work in process.

2. Yes, benefits to Phillips' customers would include increased customer satisfaction due to quicker delivery, decreased cost of products due to some of the savings in carrying costs and production costs being passed on to the consumer, and higher quality products due to quality control techniques being practiced at the time an individual unit is produced.

3. Yes, inventory should not be accounted for using traditional job costing techniques. Products move through the system so rapidly in a JIT environment that it would not be cost effective to track production costs to them while in process. For example, a Raw and In-Process account may replace the Materials account, and the Work in Process and Finished Goods accounts may disappear in a backflush costing system.

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