

Chapter 8

EXERCISES

Exercise 8–1

1. To record the purchase of inventory on account and the payment of freight charges.

Inventory	5,000	
Accounts payable		5,000
Inventory	300	
Cash		300

2. To record purchase returns.

Accounts payable	600	
Inventory		600

3. To record cash sales and cost of goods sold.

Cash	5,200	
Sales revenue		5,200
Cost of goods sold	2,800	
Inventory		2,800

Exercise 8–2

1. To record the purchase of inventory on account and the payment of freight charges.

Purchases	5,000	
Accounts payable		5,000
Freight-in	300	
Cash		300

2. To record purchase returns.

Accounts payable.....	600	
Purchase returns.....		600

3. To record cash sales.

Cash	5,200	
Sales revenue		5,200
NO ENTRY IS MADE FOR THE COST OF GOODS SOLD.		

Exercise 8-3

Requirement 1

Beginning inventory		\$ 32,000
Plus net purchases:		
Purchases	\$240,000	
Less: Purchase discounts	(6,000)	
Less: Purchases returns	(10,000)	
Plus: Freight-in	<u>17,000</u>	<u>241,000</u>
Cost of goods available for sale		273,000
Less: Ending inventory		<u>(40,000)</u>
Cost of goods sold		<u>\$233,000</u>

Requirement 2

Cost of goods sold (above).....	233,000	
Inventory (ending).....	40,000	
Purchase discounts.....	6,000	
Purchase returns.....	10,000	
Inventory (beginning).....		32,000
Purchases.....		240,000
Freight-in.....		17,000

Exercise 8–4

PERPETUAL SYSTEM		PERIODIC SYSTEM	
(\$ in 000s)			
Purchases			
Inventory	155	Purchases	155
Accounts payable	155	Accounts payable	155
Freight			
Inventory	10	Freight-in	10
Cash	10	Cash	10
Returns			
Accounts payable	12	Accounts payable	12
Inventory	12	Purchase returns	12
Sales			
Accounts receivable	250	Accounts receivable	250
Sales revenue	250	Sales revenue	250
Cost of goods sold	148	No entry	
Inventory	148		
End of period			
No entry		Cost of goods sold (below)	148
		Inventory (ending)	30
		Purchase returns	12
		Inventory (beginning)	25
		Purchases	155
		Freight-in	10
		Cost of goods sold:	
		Beginning inventory	\$25
		Purchases	\$155
		Less: Returns	(12)
		Plus: Freight-in	<u>10</u>
		Net purchases	<u>153</u>
		Cost of goods available	178
		Less: Ending inventory	<u>(30)</u>
		Cost of goods sold	<u>\$148</u>

Exercise 8–6

Inventory balance before additional transactions	\$165,000
Add:	
Goods shipped to Kwok f.o.b. shipping point on Dec. 28	17,000
Goods shipped to customer f.o.b. destination on December 27	<u>22,000</u>
Correct inventory balance	<u>\$204,000</u>

Exercise 8–8

1. Excluded
2. Included
3. Included
4. Excluded
5. Included
6. Excluded
7. Included

Exercise 8–9

Requirement 1

Purchase price = 1,000 units x \$50 = \$50,000

July 15, 2013		
Purchases	50,000	
Accounts payable		50,000

July 23, 2013		
Accounts payable	50,000	
Cash (98% x \$50,000)		49,000
Purchase discounts (2% x \$50,000)		1,000

Requirement 2

August 15, 2013		
Accounts payable	50,000	
Cash		50,000

Requirement 3

The July 15 entry would include a debit to the *inventory* account instead of to *purchases*, and the July 23 entry would include a credit to the *inventory* account instead of to *purchase discounts*.

Exercise 8–10

Requirement 1

July 15, 2013		
Purchases (98% x \$50,000)	49,000	
Accounts payable		49,000

July 23, 2013		
Accounts payable	49,000	
Cash		49,000

Requirement 2

August 15, 2013		
Accounts payable	49,000	
Interest expense	1,000	
Cash		50,000

Requirement 3

The July 15 entry would include a debit to the *inventory* account instead of to *purchases*.

Exercise 8–13

Cost of goods available for sale:

Beginning inventory (2,000 x \$6.10)		\$12,200
Purchases:		
10,000 x \$5.50	\$55,000	
6,000 x \$5.00	<u>30,000</u>	<u>85,000</u>
Cost of goods available (18,000 units)		<u>\$97,200</u>

First-in, first-out (FIFO)

Cost of goods available for sale (18,000 units)	\$97,200
Less: Ending inventory (determined below)	<u>(15,000)</u>
<i>Cost of goods sold</i>	<u>\$82,200</u>

Cost of ending inventory:

Date of purchase	Units	Unit cost	Total cost
August 18	3,000	\$5.00	<u>\$15,000</u>

Last-in, first-out (LIFO)

Cost of goods available for sale (18,000 units)	\$97,200
Less: Ending inventory (determined below)	<u>(17,700)</u>
<i>Cost of goods sold</i>	<u>\$79,500</u>

Cost of ending inventory:

Date of purchase	Units	Unit cost	Total cost
Beg. Inv.	2,000	\$6.10	\$12,200
August 8	1,000	5.50	<u>5,500</u>
Total			<u>\$17,700</u>

Exercise 8-13 (concluded)

Average cost

Cost of goods available for sale (18,000 units)	\$97,200
Less: Ending inventory (determined below)	<u>(16,200)</u>
<i>Cost of goods sold</i>	<u>\$81,000</u> *

Cost of ending inventory:

$$\text{Weighted-average unit cost} = \frac{\$97,200}{18,000 \text{ units}} = \$5.40$$

$$3,000 \text{ units} \times \$5.40 = \$16,200$$

* Alternatively, could be determined by multiplying the units sold by the average cost: 15,000 units x \$5.40 = \$81,000

Exercise 8–14

First-in, first-out (FIFO)

<i>Cost of goods sold:</i>			
Date of Sale	Units Sold	Cost of Units Sold	Total Cost
Aug. 14	2,000 (from Beg. Inv.)	\$6.10	\$12,200
	6,000 (from 8/8 purchase)	5.50	33,000
Aug. 25	4,000 (from 8/8 purchase)	5.50	22,000
	<u>3,000</u> (from 8/18 purchase)	5.00	<u>15,000</u>
Total	<u>15,000</u>		<u>\$82,200</u>

Ending inventory = 3,000 units x \$5.00 = \$15,000

Last-in, first-out (LIFO)

Date	Purchased	Sold	Balance
Beginning inventory	2,000 @ \$6.10 = \$12,200		2,000 @ \$6.10 \$12,200
August 8	10,000 @ \$5.50 = \$55,000		2,000 @ \$6.10 10,000 @ \$5.50 \$67,200
August 14		8,000 @ \$ 5.50 = \$44,000	2,000 @ \$6.10 2,000 @ \$5.50 \$23,200
August 18	6,000 @ \$5.00 = \$30,000		2,000 @ \$6.10 2,000 @ \$5.50 \$53,200 6,000 @ \$5.00
August 25		6,000 @ \$5.00 = \$30,000 1,000 @ \$5.50 = <u>\$ 5,500</u>	2,000 @ \$6.10 1,000 @ \$5.50 \$17,700 <i>Ending inventory</i>
	<i>Total cost of goods sold</i>	= \$79,500	

Exercise 8-14 (concluded)

(Note: the perpetual inventory LIFO results in this exercise are the same as periodic LIFO results, due to the timing of sales and purchases. The same LIFO layers are on hand at the end of the period under each method. This is unusual. LIFO perpetual and LIFO periodic normally produce different results for ending inventory and cost of goods sold.)

Average cost

Date	Purchased	Sold	Balance
Beginning inventory	2,000 @ \$6.10 = \$12,200		2,000 @ \$6.10 \$12,200
August 8	10,000 @ \$5.50 = \$55,000		
Available	$\frac{\$67,200}{12,000 \text{ units}} = \$5.60/\text{unit}$		
August 14		8,000 @ \$5.60 = \$44,800	4,000 @ \$5.60 \$22,400
August 18	6,000 @ \$5.00 = \$30,000		
Available	$\frac{\$52,400}{10,000 \text{ units}} = \$5.24/\text{unit}$		
August 25		7,000 @ \$5.24 = <u>\$36,680</u>	3,000 @ \$5.24 \$15,720 <i>Ending inventory</i>
	<i>Total cost of goods sold</i>	=	\$81,480

Exercise 8–15

Requirement 1

LIFO will result in the highest cost of goods sold figure because both the cost of merchandise and the quantity of merchandise rose during the period. FIFO will result in the highest ending inventory balance for the same reasons.

Requirement 2

Cost of goods available for sale:

Beginning inventory (600 x \$80)		\$ 48,000
Purchases:		
1,000 x \$ 95	\$95,000	
800 x \$100	<u>80,000</u>	<u>175,000</u>
Cost of goods available (2,400 units)		<u>\$223,000</u>

First-in, first-out (FIFO)

Cost of goods available for sale (2,400 units)		\$223,000	
Less: Ending inventory (below)		<u>(80,000)</u>	
<i>Cost of goods sold</i>		<u>\$143,000</u>	
<i>Cost of ending inventory:</i>			
Date of purchase	Units	Unit cost	Total cost
January 21	800	\$100	<u>\$80,000</u>

Last-in, first-out (LIFO)

Cost of goods available for sale (2,400 units)		\$223,000	
Less: Ending inventory (below)		<u>(67,000)</u>	
<i>Cost of goods sold</i>		<u>\$156,000</u>	
<i>Cost of ending inventory:</i>			
Date of purchase	Units	Unit cost	Total cost
Beg. Inv.	600	\$80	\$48,000
January 15	200	95	<u>19,000</u>
Total			<u>\$67,000</u>

Exercise 8–23

Date	Ending Inventory at Base Year Cost	Inventory Layers at Base Year Cost	Inventory Layers Converted to Cost	Ending Inventory DVL Cost
12/31/13	$\frac{\$200,000}{1.00} = \$200,000$	\$200,000 (base)	$\$200,000 \times 1.00 = \$200,000$	\$200,000
12/31/14	$\frac{\$231,000}{\text{Index}} = \$220,000$	Index = 1.05 \$200,000 (base) 20,000 (2014)	$\$200,000 \times 1.00 = \$200,000$ $20,000 \times 1.05 = 21,000$	221,000
12/31/15	$\frac{\$299,000}{\text{Index}} = \$260,000$	Index = 1.15 \$200,000 (base) 20,000 (2014) 40,000 (2015)	$\$200,000 \times 1.00 = \$200,000$ $20,000 \times 1.05 = 21,000$ $40,000 \times 1.15 = 46,000$	267,000
12/31/16	$\frac{\$300,000}{\text{Index}} = \$250,000$	Index = 1.20 \$200,000 (base) 20,000 (2014) 30,000 (2015)	$\$200,000 \times 1.00 = \$200,000$ $20,000 \times 1.05 = 21,000$ $30,000 \times 1.15 = 34,500$	255,500

PROBLEMS

Problem 8–1

Requirement 1

- a. To record the purchase of inventory on account and the payment of freight charges.

October 12, 2013		
Purchases (98% x \$22,000)	21,560	
Accounts payable		21,560
Freight-in	500	
Cash		500

- b. To record purchase returns.

October 18, 2013		
Accounts payable	3,000	
Purchase returns		3,000

- c. To record payment of accounts payable.

October 31, 2013		
Accounts payable	21,560	
Interest expense	440	
Cash		22,000

Problem 8-1 (continued)

d. To record sales on account.

October 2013		
Accounts receivable.....	28,000	
Sales revenue		28,000
No entry is made for the cost of goods sold.		

Cost of goods sold:

Beginning inventory		\$15,000
Plus net purchases:		
Purchases	\$21,560	
Less: Purchases returns	(3,000)	
Plus: Freight-in	<u>500</u>	<u>19,060</u>
Cost of goods available for sale		34,060
Less: Ending inventory		<u>(16,060)</u>
Cost of goods sold		<u>\$18,000</u>

Adjusting entry:

October 31, 2013		
Cost of goods sold (above).....	18,000	
Inventory (ending)	16,060	
Purchase returns.....	3,000	
Inventory (beginning).....		15,000
Purchases		21,560
Freight-in		500

Problem 8-1 (concluded)

Requirement 2

- a. To record the purchase of inventory on account and the payment of freight charges.

October 12, 2013		
Inventory (98% x \$22,000).....	21,560	
Accounts payable		21,560
Inventory	500	
Cash		500

- b. To record purchase returns.

October 18, 2013		
Accounts payable.....	3,000	
Inventory		3,000

- c. To record payment of accounts payable.

October 31, 2013		
Accounts payable.....	21,560	
Interest expense	440	
Cash		22,000

- d. To record sales on account.

October 2013		
Accounts receivable.....	28,000	
Sales revenue		28,000
Cost of goods sold	18,000	
Inventory		18,000

Problem 8–4

Requirement 1

Beginning inventory (10,000 x \$8.00)		\$ 80,000
Net purchases:		
Purchases (50,000* units x \$10.00)	\$500,000	
Less: Returns (1,000 units x \$10.50)	(10,500)	
Less: Purchase discounts (\$490,000 x 2%)	(9,800)	
Plus: Freight-in (50,000 units x \$.50)	<u>25,000</u>	<u>504,700</u>
Cost of goods available (59,000 units)		584,700
Less: Ending inventory (below)		<u>(121,200)</u>
Cost of goods sold		<u>\$463,500</u>

* The 5,000 units purchased on December 28 are not included. The merchandise was shipped f.o.b. destination and did not arrive at Johnson's warehouse until 2014.

Cost of ending inventory:

Date of purchase	Units	Unit cost	Total cost
Beg. Inv.	10,000	\$ 8.00	\$ 80,000
2013	<u>4,000</u>	10.30**	<u>41,200</u>
Total	<u>14,000</u>		<u>\$121,200</u>

**\$10 x 98% = \$9.80 + .50 in freight charges = \$10.30

Requirement 2

Sales (45,000 units x \$18.00)		\$810,000
Less:		
Cost of goods sold (above)	\$463,500	
Other operating expenses	<u>150,000</u>	<u>(613,500)</u>
Income before income taxes		<u>\$196,500</u>

Problem 8–5

Cost of goods available for sale for periodic system:

Beginning inventory (6,000 x \$8.00)		\$ 48,000
Purchases:		
5,000 x \$ 9.00	\$45,000	
6,000 x \$10.00	<u>60,000</u>	<u>105,000</u>
Cost of goods available (17,000 units)		<u>\$153,000</u>

1. FIFO, periodic system

Cost of goods available for sale (17,000 units)	\$153,000
Less: Ending inventory (determined below)	<u>(78,000)</u>
<i>Cost of goods sold</i>	<u>\$ 75,000</u>

Cost of ending inventory:

Date of purchase	Units	Unit cost	Total cost
Jan. 10	2,000	\$ 9.00	\$18,000
Jan. 18	<u>6,000</u>	10.00	<u>60,000</u>
Totals	<u>8,000</u>		<u>\$78,000</u>

Alternatively, cost of goods sold can be determined by adding the cost of the 6,000 units in beginning inventory (\$48,000) and the 3,000 units from the January 10 purchase (\$27,000) = \$75,000.

Problem 8-5 (continued)

2. LIFO, periodic system

Cost of goods available for sale (17,000 units)	\$153,000
Less: Ending inventory (determined below)	<u>(66,000)</u>
<i>Cost of goods sold</i>	<u>\$ 87,000</u>

Cost of ending inventory:

Date of purchase	Units	Unit cost	Total cost
Beg. Inv.	6,000	\$8.00	\$48,000
Jan. 10	<u>2,000</u>	9.00	<u>18,000</u>
Totals	<u>8,000</u>		<u>\$66,000</u>

Alternatively, cost of goods sold can be determined by adding the cost of the 6,000 units from the January 18 purchase (\$60,000) and the 3,000 units from the January 10 purchase (\$27,000) = \$87,000.

Problem 8-5 (continued)

3. LIFO, perpetual system

Date	Purchased	Sold	Balance
Beginning inventory	6,000 @ \$8.00 = \$48,000		6,000 @ \$8.00 \$48,000
January 5		3,000 @ \$8.00 = \$24,000	3,000 @ \$8.00 \$24,000
January 10	5,000 @ \$9.00 = \$45,000		3,000 @ \$8.00 5,000 @ \$9.00 \$69,000
January 12		2,000 @ \$9.00 = \$18,000	3,000 @ \$8.00 3,000 @ \$9.00 \$51,000
January 18	6,000 @ \$10.00 = \$60,000		3,000 @ \$8.00 3,000 @ \$9.00 6,000 @ \$10.00 \$111,000
January 20		4,000 @ \$10.00 = <u>\$40,000</u>	3,000 @ \$8.00 3,000 @ \$9.00 2,000 @ \$10.00 \$71,000 <i>Ending inventory</i>
	<i>Total cost of goods sold</i>	= \$82,000	

4. Average cost, periodic system

Cost of goods available for sale (17,000 units)	\$153,000
Less: Ending inventory (below)	<u>(72,000)</u>
<i>Cost of goods sold</i>	<u>\$ 81,000</u>
 <i>Cost of ending inventory:</i>	
Weighted-average unit cost =	$\frac{\$153,000}{17,000 \text{ units}} = \9.00
8,000 units x \$9.00 =	\$72,000
Alternatively, cost of goods sold could be determined by multiplying the units sold by the average cost: 9,000 units x \$9.00 = \$81,000.	

Problem 8-5 (concluded)

5. Average cost, perpetual system

Date	Purchased	Sold	Balance
Beginning inventory	6,000 @ \$8.00 = \$48,000		6,000 @ \$8.00 \$48,000
January 5		3,000 @ \$8.00 = \$24,000	3,000 @ \$8.00 \$24,000
January 10	5,000 @ \$9.00 = \$45,000		
Available	$\frac{\$69,000}{8,000 \text{ units}} = \$8.625/\text{unit}$		
January 12		2,000 @ \$8.625 = \$17,250	6,000 @ \$8.625 \$51,750
January 18	6,000 @ \$10.00 = \$60,000		
Available	$\frac{\$111,750}{12,000 \text{ units}} = \$9.3125/\text{unit}$		
January 20		4,000 @ \$9.3125 = <u>\$37,250</u>	8,000 @ \$9.3125 \$74,500 <i>Ending inventory</i>
	<i>Total cost of goods sold</i>	= \$78,500	

Problem 8–7

Requirement 1

Beginning inventory (\$60,000 + 60,000 + 63,000)		\$183,000
Purchases:		
211	\$63,000	
212	63,000	
213	64,500	
214	66,000	
215	69,000	
216	70,500	
217	72,000	
218	72,300	
219	<u>75,000</u>	<u>615,300</u>
Cost of goods available		798,300
Ending inventory:		
213	\$64,500	
216	70,500	
219	<u>75,000</u>	<u>(210,000)</u>
Cost of goods sold		<u>\$588,300</u>

Requirement 2

Cost of goods available for sale	\$798,300
Less: Ending inventory (below)	<u>(219,300)</u>
<i>Cost of goods sold</i>	<u>\$579,000</u>

Cost of ending inventory (3 autos):

Car ID	Cost
219	\$ 75,000
218	72,300
217	<u>72,000</u>
Total	<u>\$219,300</u>

Problem 8-7 (concluded)

Requirement 3

Cost of goods available for sale	\$798,300
Less: Ending inventory (below)	<u>(183,000)</u>
<i>Cost of goods sold</i>	<u>\$615,300</u>
 <i>Cost of ending inventory (3 autos):</i>	
Car ID	Cost
203	\$ 60,000
207	60,000
210	<u>63,000</u>
Total	<u>\$183,000</u>

Requirement 4

Cost of goods available for sale (12 units)	\$798,300
Less: Ending inventory (below)	<u>(199,575)</u>
<i>Cost of goods sold</i>	<u>\$598,725*</u>
 <i>Cost of ending inventory:</i>	
Weighted-average unit cost =	$\frac{\$798,300}{12 \text{ units}} = \$66,525$
 3 units x \$66,525 = \$199,575	
 * Alternatively, could be determined by multiplying the units sold by the average cost: 9 units x \$66,525 = \$598,725	

Problem 8–12

Requirement 1

Allowance for uncollectible accounts

Balance, beginning of year	\$7
Add: Bad debt expense for 2013	8
Less: End-of-year balance	<u>(10)</u>
Accounts receivable written off	\$ 5

Requirement 2

Accounts receivable analysis:

Balance, beginning of year (\$583 + 7)	\$ 590
Add: Credit sales	6,255
Less: write-offs (from Requirement 1)	(5)
Less: Balance end of year (\$703 + 10)	<u>(713)</u>
Cash collections	\$6,127

Requirement 3

Cost of goods sold for 2013 would have been **\$130 million lower** had Inverness used the average cost method for its entire inventory. While beginning inventory would have been \$350 million higher, ending inventory also would have been higher by \$480 million. An increase in beginning inventory causes an increase in cost of goods sold, but an increase in ending inventory causes a decrease in cost of goods sold. Purchases for the year are the same regardless of the inventory valuation method used. Therefore, cost of goods sold would have been **\$5,060** (\$5,190 – 130).

Requirement 4

a. Receivables turnover ratio = $\frac{\$6,255}{(\$703 + 583)/2}$ = **9.73 times**

b. Inventory turnover ratio = $\frac{\$5,190}{(\$880 + 808)/2}$ = **6.15 times**

c. Gross profit ratio = $\frac{(\$6,255 - 5,190)}{\$6,255}$ = **17%**

Problem 8–12 (concluded)

Requirement 5

If inventory costs are increasing, when inventory quantity declines during a period, liquidation of LIFO inventory layers carried at lower costs prevailing in prior year's results in noncurrent costs being matched with current selling prices. The "income" generated by this liquidation is known as LIFO liquidation profit.

The liquidation caused 2013 cost of goods sold to be lower by \$9.23 million
[\$6 million \div (1 - .35)]

Problem 8–13

Date	Ending Inventory at Base Year Cost	Inventory Layers at Base Year Cost	Inventory Layers Converted to Cost	Ending Inventory DVL Cost
1/1/13	$\frac{\$400,000}{1.00} = \$400,000$	\$400,000 (base)	\$400,000 x 1.00 = \$400,000	\$400,000
12/31/13	$\frac{\$441,000}{1.05} = \$420,000$	\$400,000 (base) 20,000 (2013)	\$400,000 x 1.00 = \$400,000 20,000 x 1.05 = 21,000	421,000
12/31/14	$\frac{\$487,200}{1.12} = \$435,000$	\$400,000 (base) 20,000 (2013) 15,000 (2014)	\$400,000 x 1.00 = \$400,000 20,000 x 1.05 = 21,000 15,000 x 1.12 = 16,800	437,800
12/31/15	$\frac{\$510,000}{1.20} = \$425,000$	\$400,000 (base) 20,000 (2013) 5,000 (2014)	\$400,000 x 1.00 = \$400,000 20,000 x 1.05 = 21,000 5,000 x 1.12 = 5,600	426,600