Chapter One

Inventories

1.1. Classification of Inventories

Inventories are asset items held for sale in the ordinary course of business, **or** goods to be used in the production of goods to be sold.

Classifying Inventory

Merchandising Company

One Classification:

- Merchandise Inventory

Manufacturing Company

Three Classifications:

- Raw Materials
- Work in Process
- Finished Goods

Helpful Hint: Regardless of the classification, companies report all inventories under **Current Assets** on the **SoFP.**

1.2. Determining Inventory Quantities

No matter whether they are using a periodic or perpetual inventory system, all companies need to determine inventory quantities at the end of the accounting period.

Physical Inventory taken for two reasons:

Perpetual System

1. Check accuracy of inventory records.
2. Determine amount of inventory lost due to wasted raw materials, shoplifting, or employee theft.

Periodic System

1. Determine the inventory on hand.
2. Determine the cost of goods sold for the period.

Determining inventory quantities involves two steps:
(1) taking a physical inventory of goods on hand and
(2) determining the ownership of goods.

Taking a Physical Inventory

Involves counting, weighing, or measuring each kind of inventory on hand.

Companies often "take inventory"

- when the business is closed or business is slow.
- at the end of the accounting period.

ETHICS NOTE

In a famous fraud, a salad oil company filled its storage tanks mostly with water. The oil rose to the top, so auditors thought the tanks were full of oil. The company also said it had more tanks than it really did: It repainted numbers on the tanks to confuse auditors.

Determining Ownership of Goods

GOODS IN TRANSIT

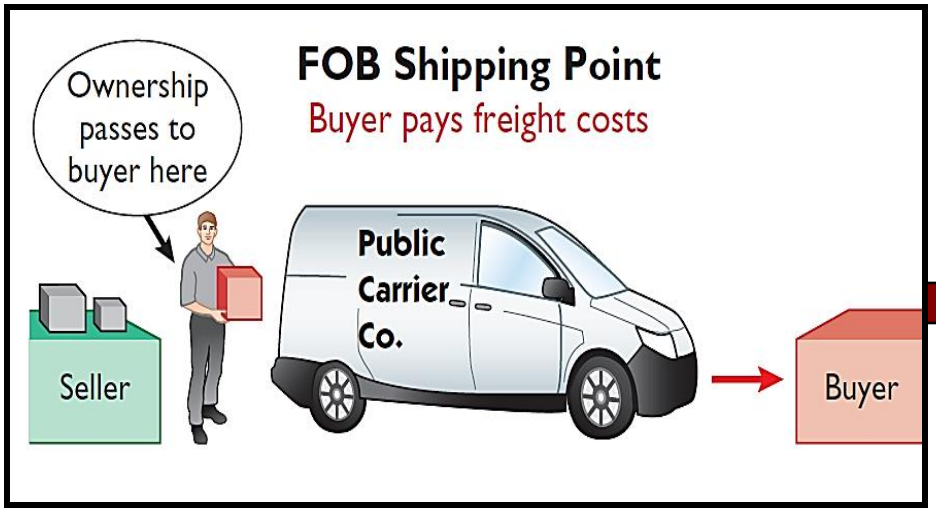
- Purchased goods not yet received.
- Sold goods not yet delivered.

Goods in transit should be included in the inventory of the company that has **legal title** to the goods. Legal title is determined by the **terms of sale.**

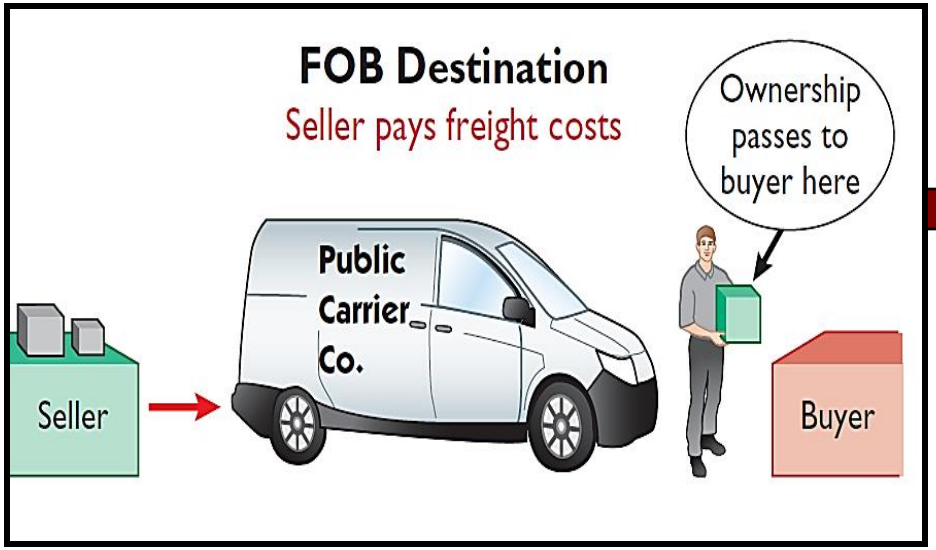
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Goods In Transit

Terms of sale



Ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller.



Ownership of the goods remains with the seller until the goods reach the buyer.

Question # 1:

Goods in transit should be included in the inventory of the buyer when the:

a. public carrier accepts the goods from the seller.

b. goods reach the buyer.

c. terms of sale are FOB destination.

d. terms of sale are FOB shipping point.

CONSIGNED GOODS

To hold the goods of other parties and try to sell the goods for them for a fee, but without taking ownership of the goods.

Many car, boat, and antique dealers sell goods on consignment, why?

> DO IT!

Deng Yaping Company completed its inventory count. It arrived at a total inventory value of ¥200,000. You have been given the information listed below. Discuss how this information affects the reported cost of inventory.

1. **Deng Yaping** included in the inventory goods held on consignment for Falls Co., costing ¥15,000.
2. The company did not include in the count purchased goods of ¥10,000, which were in transit (terms: **FOB shipping point**).
3. The company did not include in the count inventory that had been sold with a cost of ¥12,000, which was in transit (terms: **FOB shipping point**).

1.3. Inventory Costing Methods

Inventory is accounted for at cost.

- Cost includes all expenditures necessary to acquire goods and place them in a condition ready for sale.
- Unit costs are applied to quantities to compute the total cost of the inventory and the cost of goods sold using the following costing methods:
  - Specific identification
  - First-in, first-out (FIFO)
  - Average-cost

Cost Flow Assumptions

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Illustration: Crivitz TV Company purchases three identical 50-inch TVs on different dates at costs of £700, £750, and £800. During the year Crivitz sold two sets at £1,200 each. These facts are summarized below.

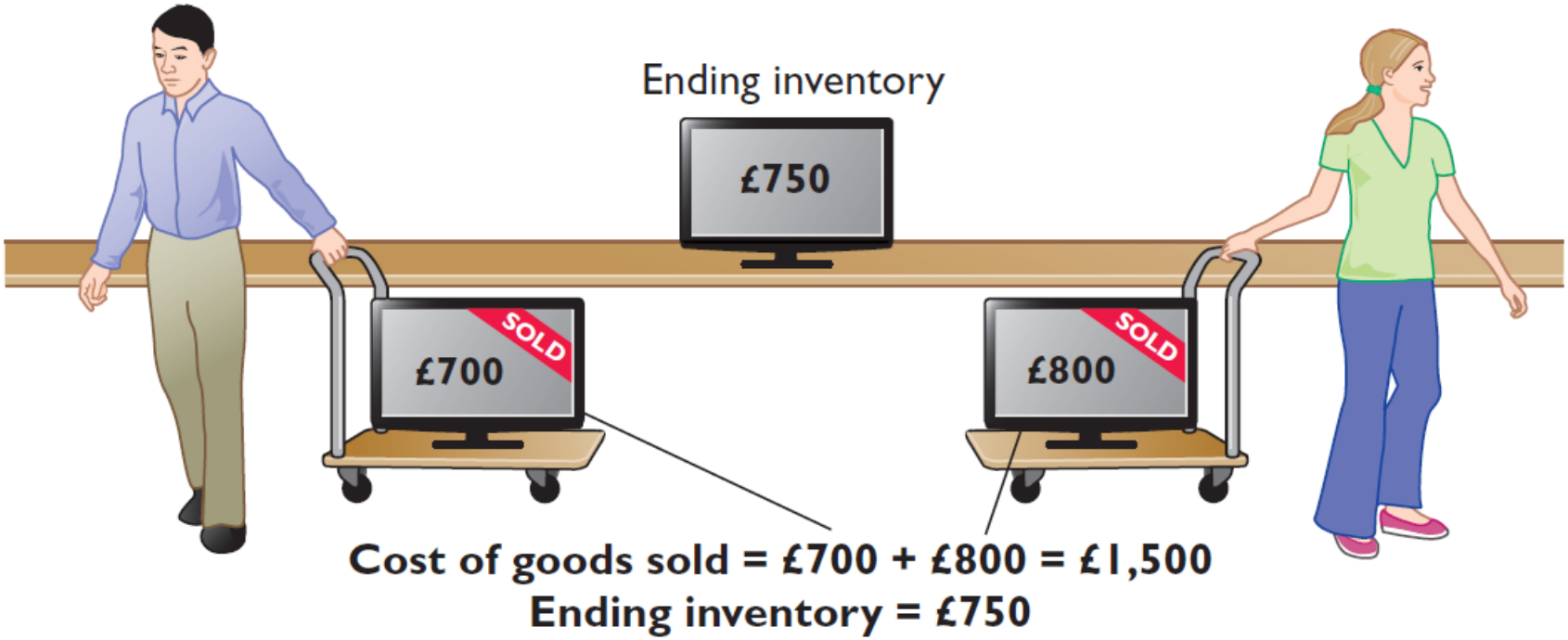
Illustration: Data for Inventory Costing Example

Purchases			
February 3	1 TV	at	£700
March 5	1 TV	at	£750
May 22	1 TV	at	£800
Sales			
June 1	2 TVs	for	£2,400 (£1,200 × 2)

1.3.1. Specific Identification

If Crivitz sold the TVs it purchased on February 3 and May 22, then its cost of goods sold is £1,500 (£700 + £800), and its ending inventory is £750.

Illustration: Specific Identification Method



Cont'd

Actual physical flow costing method in which items still in inventory are specifically costed to arrive at the total cost of the ending inventory.

- Practice is relatively rare.
- Most companies make assumptions (**cost flow assumptions**) about which units were sold.

ETHICS NOTE

A major disadvantage of the specific identification method is that management may be able to manipulate net income. For example, it can boost net income by selling units purchased at a low cost, or reduce net income by selling units purchased at a high cost.

1.3.2. Cost Flow Assumptions

There are two assumed cost flow methods:

1. First-in, first-out (FIFO)
2. Average-cost

Cost flow does not need be consistent with the physical movement of the goods.

Data for Lin Electronics' Astro condensers. Illustration

LIN ELECTRONICS
Astro Condensers

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	10	HK$100	HK$ 1,000
Apr. 15	Purchase	20	110	2,200
Aug. 24	Purchase	30	120	3,600
Nov. 27	Purchase	40	130	5,200
	Total units available for sale	100		HK$12,000
	Units in ending inventory	(45)		
	Units sold	55		

(Beginning Inventory + Purchases) - Ending Inventory = Cost of Goods Sold

FIRST-IN, FIRST-OUT (FIFO)

- **Costs of the earliest goods purchased** are the first to be recognized in determining cost of goods sold.
- Often parallels actual physical flow of merchandise.
- Companies obtain the cost of the ending inventory by taking the unit cost of the most recent purchase and working backward until all units of inventory have been costed.

Cont'd

Illustration: Allocation of costs—FIFO method

Cost of Goods Available for Sale

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	10	HK$100	HK $ 1,000
Apr. 15	Purchase	20	110	2,200
Aug. 24	Purchase	30	120	3,600
Nov. 27	Purchase	40	130	5,200
	Total	100		**HK$12,000**

Step 1: Ending Inventory

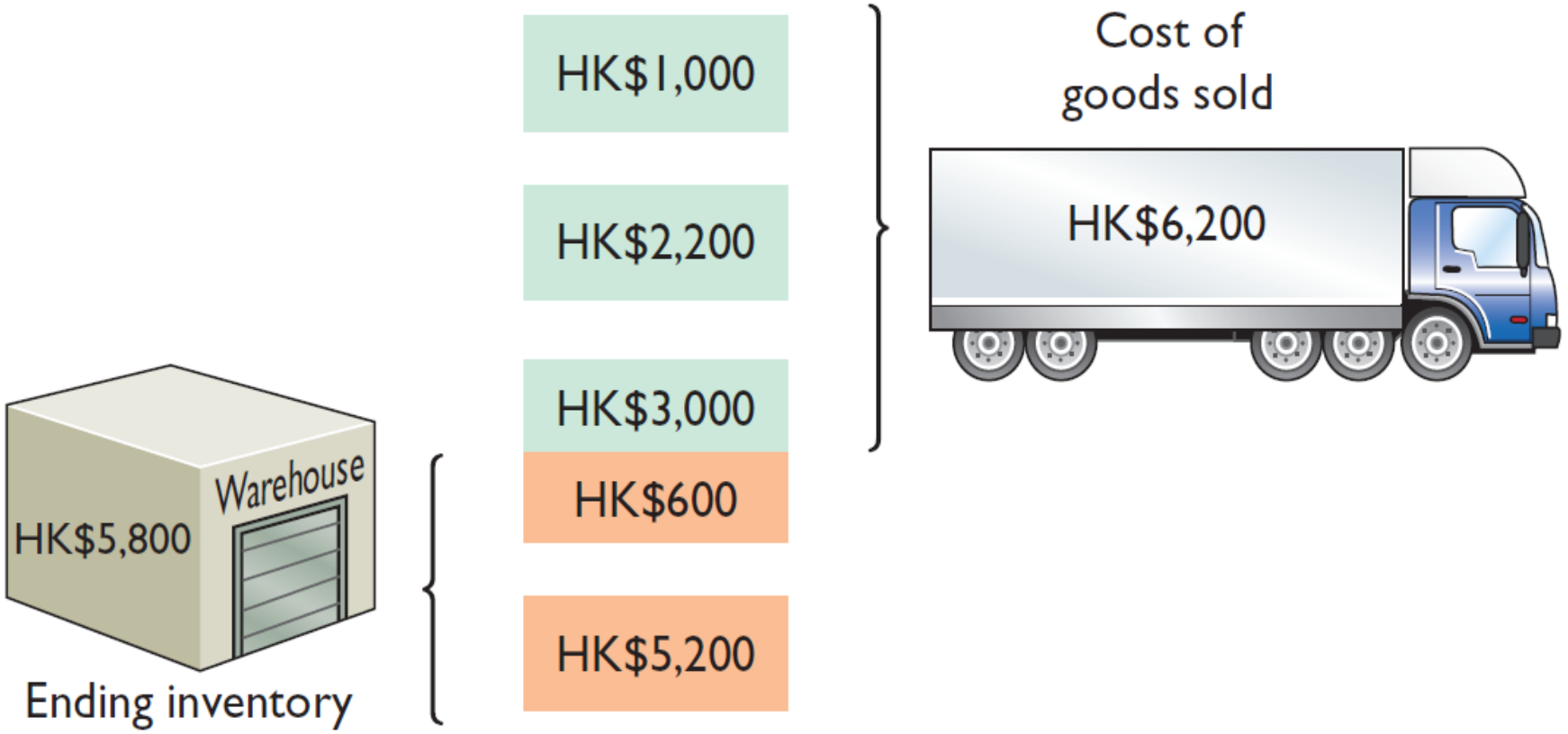
Date	Units	Cost	Cost
Nov. 27	40	HK$130	HK$ 5,200
Aug. 24	5	120	600
Total	45		**HK$5,800**

Step 2: Cost of Goods Sold

Cost of goods available for sale	HK$12,000
Less: Ending inventory	5,800
Cost of goods sold	**HK$ 6,200**

Cont'd

Illustration: Allocation of costs—FIFO method



- **HELPFUL HINT**

Another way of thinking about the calculation of FIFO ending inventory is the ***LISH assumption***—last in still here.

AVERAGE-COST

- Allocates cost of goods available for sale on the basis of **weighted-average unit cost** incurred.
- Applies weighted-average unit cost to the **units on hand** to determine cost of the ending inventory.

Illustration: Formula for weighted-average unit cost

Cost of Goods Available for Sale	÷	Total Units Available for Sale	=	Weighted-Average Unit Cost
HK$12,000	÷	100	=	HK$120

Cont'd

Illustration: Allocation of costs—Average-Cost Method

Cost of Goods Available for Sale

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	10	HK$100	HK$ 1,000
Apr. 15	Purchase	20	110	2,200
Aug. 24	Purchase	30	120	3,600
Nov. 27	Purchase	40	130	5,200
	Total	100		HK$12,000

Step 1: Ending Inventory

HK$12,000 ÷ 100 = HK$120

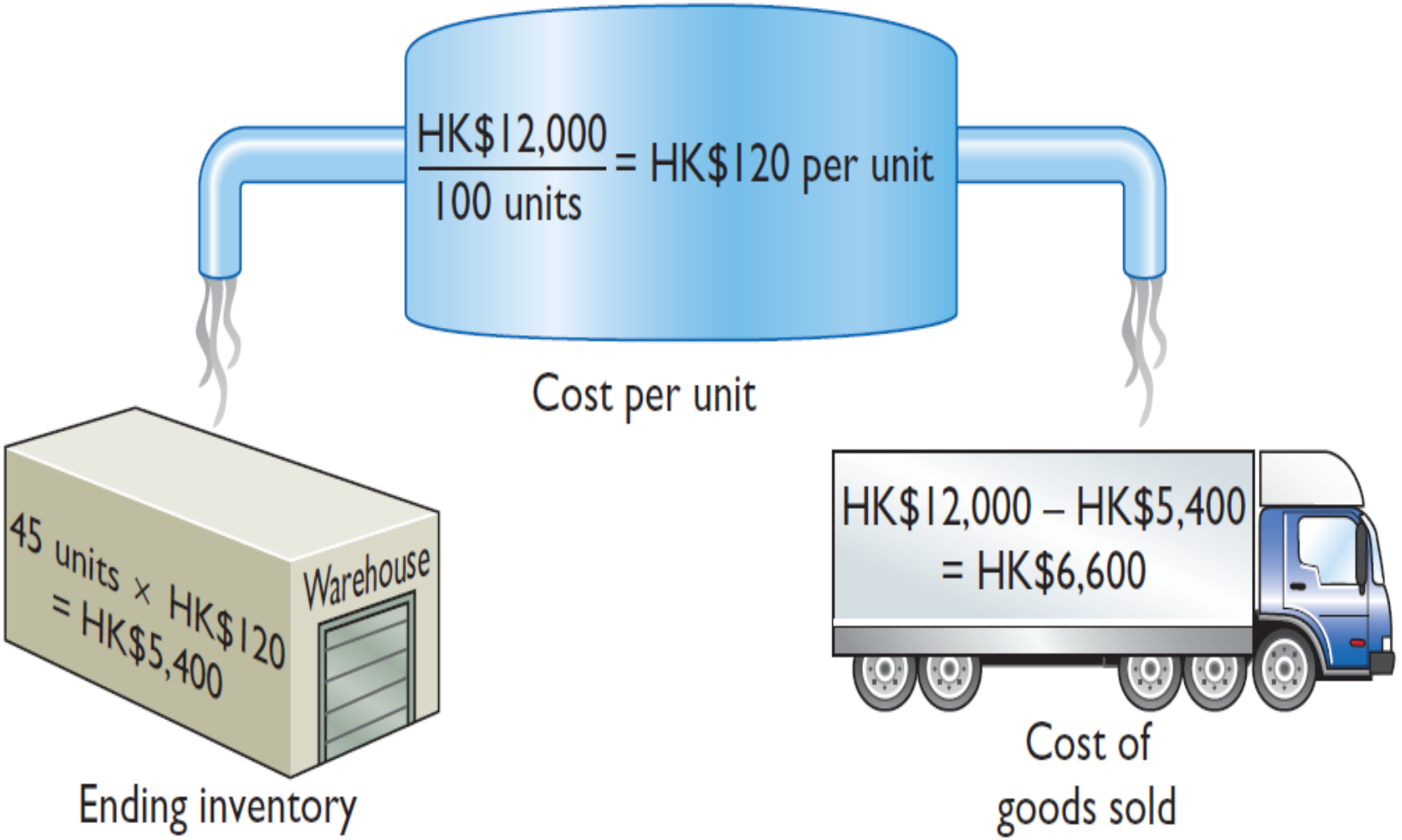
Units	Unit Cost	Total Cost
45	HK$120	HK$5,400

Step 2: Cost of Goods Sold

Cost of goods available for sale	HK$12,000
Less: Ending inventory	5,400
Cost of goods sold	HK$ 6,600

Cont'd

Illustration: Allocation of costs—Average-Cost Method



> DO IT!

The accounting records of Shumway Ag Implement show the following.

Beginning Inventory	4,000 units at £ 3
Purchases	6,000 units at £ 4
Sales	7,000 units at £12

Determine the cost of goods sold during the period under a periodic inventory system using:

(a) the FIFO method and

(b) the average-cost method.

Cont'd

Comprehensive DO IT! 1

Gerald D. Englehart Company has the following inventory, purchases, and sales data for the month of March.

Inventory:	March 1	200 units @ €4.00	€ 800
Purchases:	March 10	500 units @ €4.50	2,250
	March 20	400 units @ €4.75	1,900
	March 30	300 units @ €5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **periodic inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO and (b) average-cost.

1.3.3. Inventory CF Methods in Perpetual Inventory Systems

Data for Lin Electronics' Astro condensers. Illustration

Lin Electronics
Astro Condensers

Date	Explanation	Units	Units Cost	Total Cost	Balance in Units
1/1	Beginning inventory	10	HK$100	HK$ 1,000	10
4/15	Purchases	20	110	2,200	30
8/24	Purchases	30	120	3,600	60
9/10	Sale	55			5
11/27	Purchases	40	130	5,200	45
				HK$12,000	

Assuming the Perpetual Inventory System, compute CGS and Ending Inventory under **FIFO** and **Average-cost**.

First-In-First-Out (FIFO)

Illustration: Perpetual System—FIFO

Date	Purchases	Cost of Goods Sold	Balance (in units and cost)
January 1			(10 @ HK$100) HK$ 1,000
April 15	(20 @ HK$110) HK$2,200		(10 @ HK$100) (20 @ HK$110) HK$ 3,200
August 24	(30 @ HK$120) HK$3,600		(10 @ HK$100) (20 @ HK$110) (30 @ HK$120) HK$ 6,800
September 10		(10 @ HK$100) (20 @ HK$110) (25 @ HK$120) **HK$6,200**	(5 @ HK$120) HK$ 600
November 27	(40 @ HK$130) HK$5,200		(5 @ HK$120) (40 @ HK$130) **HK$5,800**

Cost of Goods Sold

Ending Inventory

Average-Cost

Illustration: Perpetual System—Average-cost method

Date	Purchases	Cost of Goods Sold	Balance (in units and cost)
January 1			(10 @ HK$100) HK$ 1,000
April 15	(20 @ HK$110) HK$2,200		(30 @ HK$106.667) HK$ 3,200
August 24	(30 @ HK$120) HK$3,600		(60 @ HK$113.333) HK$ 6,800
September 10		(55 @ HK$113.333)	(5 @ HK$113.333) HK$ 567
		HK$6,233	
November 27	(40 @ HK$130) HK$5,200		(45 @ HK$128.156) HK$5,767

Cost of Goods Sold

Ending Inventory

Cont'd

Comprehensive DO IT! 2

Comprehensive DO IT! 1 on pages 280–281 showed cost of goods sold computations under a periodic inventory system. Now let's assume that Gerald D. Englehart Company uses a perpetual inventory system. The company has the same inventory, purchases, and sales data for the month of March as shown earlier:

Inventory:	March 1	200 units @ €4.00	€ 800
Purchases:	March 10	500 units @ €4.50	2,250
	March 20	400 units @ €4.75	1,900
	March 30	300 units @ €5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **perpetual inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO and (b) average-cost.

FS and Tax Effects of Cost Flow Methods

Either of the **two cost flow assumptions** is acceptable for use. For example,

- **adidas** (DEU) and **Lenovo** (CHN) use the average-cost method, whereas
- **Syngenta Group** (CHE) and **Nokia** (FIN) use FIFO.

A recent survey of IFRS companies, approximately

- 60% use the average-cost method,
- 40% use FIFO, and
- 23% use both for different parts of their inventory.

INCOME STATEMENT EFFECTS

Illustration: Comparative effects of cost flow methods

LIN ELECTRONICS
Condensed Income Statements

	FIFO	Average-Cost
Sales revenue	HK$11,500	HK$11,500
Beginning inventory	1,000	1,000
Purchases	11,000	11,000
Cost of goods available for sale	12,000	12,000
Ending inventory	**5,800**	**5,400**
Cost of goods sold	6,200	6,600
Gross profit	5,300	4,900
Operating expenses	2,000	2,000
Income before income taxes*	3,300	2,900
Income tax expense (30%)	990	870
Net income	**HK$ 2,310**	**HK$ 2,030**

*We are assuming that Lin Electronics is a corporation, and corporations are required to pay income taxes.

SoFP EFFECTS

- A major **advantage** of the **FIFO method** is that in a period of inflation, the costs allocated to ending inventory will **approximate their current cost**.
- A major **shortcoming** of the **average-cost method** is that in a period of inflation, the costs allocated to ending inventory may be **understated** in terms of current cost.

TAX EFFECTS

- Both inventory and net income are higher when companies use **FIFO** in a period of inflation.
- **Average-cost** results in the lower income taxes (because of lower net income) during times of rising prices.

Using Cost Flow Methods Consistently

- Method should be used consistently, enhances comparability.
- Although consistency is preferred, a company may change its inventory costing method.

Question # 2:

In periods of rising prices, average-cost will produce:

a. higher net income than FIFO.

b. the same net income as FIFO.

c. lower net income than FIFO.

d. NI equal to the specific identification method.

Question # 3:

Factors that affect the selection of an inventory costing method do not include:

a. tax effects.

b. statement of financial position effects.

c. income statement effects.

d. perpetual vs. periodic inventory system.

1.3.4. Lower-of-Cost-or-Net Realizable Value

When the value of inventory is lower than its cost

- companies must "write down" the inventory to its **net realizable value**.

Net realizable value: Amount that a company expects to realize (receive from the sale of inventory).

Cont'd

Illustration: Assume that Gao TV has the following lines of merchandise with costs and market values as indicated.

Illustration: Computation of lower-of-cost-or-net realizable value

	Units	Cost per Unit	Net Realizable Value per Unit	Lower-of-Cost-or-Net Realizable Value	
Flat-screen TVs	100	NT$600	NT$550	NT$ 55,000	(NT$550 × 100)
Satellite radios	500	90	104	45,000	(NT$90 × 500)
DVD recorders	850	50	48	40,800	(NT$48 × 850)
DVDs	3,000	5	6	15,000	(NT$5 × 3,000)
Total inventory				NT$155,800	

> DO IT!

LCNRV Basis

Tracy Company sells three different types of home heating stoves (wood, gas, and pellet). The cost and net realizable value of its inventory of stoves are as follows.

	Cost	Net Realizable Value
Gas	NT$ 84,000	NT$ 79,000
Wood	250,000	280,000
Pellet	112,000	101,000

Determine the value of the company's inventory under the lower-of-cost-or-net realizable value approach.

Total inventory value is the sum of these amounts, **NT$430,000**.

1.4. Inventory Errors

- Unfortunately, errors occasionally occur in accounting for inventory.
- In some cases, errors are caused by failure to **count** or **price** inventory correctly.
- In other cases, errors occur because companies **do not properly recognize** the transfer of legal title to goods that are in transit.
- When errors occur, they affect both the **Income Statement** and **SoFP.**

Income Statement Effects

Inventory errors affect the computation of Cost of Goods Sold and Net Income **in two periods.**

Illustration: Formula for cost of goods sold

Beginning Inventory	+	Cost of Goods Purchased	−	Ending Inventory	=	Cost of Goods Sold

Illustration: Effects of inventory errors on current year's income statement

When Inventory Error:	Cost of Goods Sold Is:	Net Income Is:
Understates beginning inventory	Understated	Overstated
Overstates beginning inventory	Overstated	Understated
Understates ending inventory	Overstated	Understated
Overstates ending inventory	Understated	Overstated

Cont'd

- An error in ending inventory of the current period will have a **reverse effect on net income of the next accounting period**.
- Over the two years, the total net income is correct because the errors **offset** each other.
- Ending inventory depends entirely on the accuracy of taking and costing the inventory.
- Illustration 6-13 shows this effect.

Illustration: Effects of Inventory Errors on Two Years' Income Statements

Sample Company
Condensed Income Statements

	2013		2014	
	Incorrect	Correct	Incorrect	Correct
Sales revenue	€80,000	€80,000	€90,000	€90,000
Beginning inventory	€20,000	€20,000	**€12,000**	**€15,000**
Cost of goods purchased	40,000	40,000	68,000	68,000
Cost of goods available for sale	60,000	60,000	80,000	83,000
Ending inventory	**12,000**	**15,000**	23,000	23,000
Cost of goods sold	48,000	45,000	57,000	60,000
Gross profit	32,000	35,000	33,000	30,000
Operating expenses	10,000	10,000	20,000	20,000
Net income	€22,000	€25,000	€13,000	€10,000

€(3,000) Net income understated

€3,000 Net income overstated

The errors cancel. Thus the combined total income for the 2-year period is correct.

- As you study the illustration, you will see that the reverse effect comes from the fact that understating **ending inventory in 2013** results in understating **beginning inventory in 2014** and overstating **net income in 2014.**
- Over the two years, though, **total net income** is **correct** because the errors **offset each other.**
- Notice that total income using incorrect data is €35,000 (€22,000 + €13,000), which is the same as the total income of €35,000 (€25,000 + €10,000) using correct data.

Cont'd

- Also note in this example that an error in the beginning inventory does not result in a corresponding error in the ending inventory for that period.
- The correctness of the ending inventory depends entirely on the accuracy of taking and costing the inventory at the SoFP date under the periodic inventory system.

Question # 4:

Atlantis Company's ending inventory is understated by NT$122,000. The effects of this error on the current year's CGS and Net Income, respectively, are:

a. understated, overstated.

b. overstated, understated.

c. overstated, overstated.

d. understated, understated.

SoFP Effects

Effect of inventory errors on the statement of financial position is determined by using the **basic accounting equation**: **Assets = Liabilities + Equity**.

Errors in the ending inventory have the following effects.

Illustration: Effects of ending inventory errors on SoFP

Ending Inventory Error	Assets	Liabilities	Equity
Overstated	Overstated	No effect	Overstated
Understated	Understated	No effect	Understated

> DO IT!

Inventory Errors

Visual Company overstated its 2016 ending inventory by NT$22,000. Determine the impact this error has on ending inventory, cost of goods sold, and equity in 2016 and 2017.

	2016	2017
Ending inventory	NT$22,000 overstated	No effect
Cost of goods sold	NT$22,000 understated	NT$22,000 overstated
Equity	NT$22,000 overstated	No effect

1.5. Estimating Inventories

Gross Profit Method

Estimates the cost of ending inventory by applying a gross profit rate to **net sales**.

Illustration 6B-1: Gross profit Method Formulas

Step 1:	Net Sales	–	Estimated Gross Profit	=	Estimated Cost of Goods Sold
Step 2:	Cost of Goods Available for Sale	–	Estimated Cost of Goods Sold	=	Estimated Cost of Ending Inventory

Cont'd

Illustration: Kishwaukee Company's records for January show net sales of $200,000, beginning inventory $40,000, and cost of goods purchased $120,000. The company expects to earn a 30% gross profit rate. Compute the estimated cost of the ending inventory at January 31 under the gross profit method.

Illustration: Example of Gross Profit Method

Step 1:	
Net sales	$200,000
Less: Estimated gross profit (30% × $200,000)	60,000
Estimated cost of goods sold	**$140,000**
Step 2:	
Beginning inventory	$ 40,000
Cost of goods purchased	120,000
Cost of goods available for sale	160,000
Less: Estimated cost of goods sold	140,000
Estimated cost of ending inventory	**$ 20,000**

Retail Inventory Method

Company applies the cost-to-retail percentage to ending inventory at retail prices to determine inventory at cost.

Illustration: Retail Inventory Method Formulas

Step 1:	Goods Available for Sale at Retail	−	Net Sales	=	Ending Inventory at Retail
Step 2:	Goods Available for Sale at Cost	÷	Goods Available for Sale at Retail	=	Cost-to-Retail Ratio
Step 3:	Ending Inventory at Retail	×	Cost-to-Retail Ratio	=	Estimated Cost of Ending Inventory

Cont'd

Illustration: Application of Retail Inventory Method

	At Cost	At Retail
Beginning inventory	$14,000	$ 21,500
Goods purchased	61,000	78,500
Goods available for sale	$75,000	100,000
Net sales		70,000
Step (1) Ending inventory at retail =		$ 30,000
Step (2) Cost-to-retail ratio $75,000 ÷ $100,000 = 75%		
Step (3) Estimated cost of ending inventory = $30,000 × 75% =	$22,500	

Note that it is not necessary to take a physical inventory to estimate the cost of goods on hand at any given time.

The End of Chapter 1

Thank You!!!