

ACC250: Intro to Financial Accounting
Ch6. Merchandising Operations & Multistep Income Statements

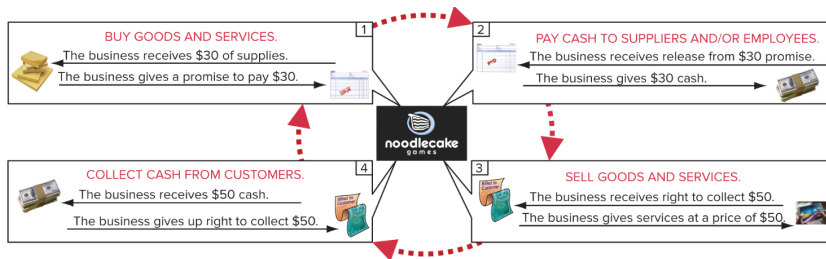
Jaeyoon Yu, Ph.D.
Central Michigan University

- 1 Introduction to Inventory
- 2 Inventory System
 - Periodic Inventory System
 - Perpetual Inventory System
- 3 Journal Entries Related to Inventory
 - Inventory Purchase Transactions
 - Inventory Selling Transactions
- 4 Multistep Income Statements and Profit Ratios

Operating Cycle

The period from the purchase of goods & services to cash collection from customers.

- 1 Purchase of goods & services from suppliers (including inventory)
- 2 Payment to suppliers
- 3 Sale of goods & services to customers
- 4 Collection of cash from customers



Inventory (Asset)

The total value of the goods held for sale in the ordinary course of business.

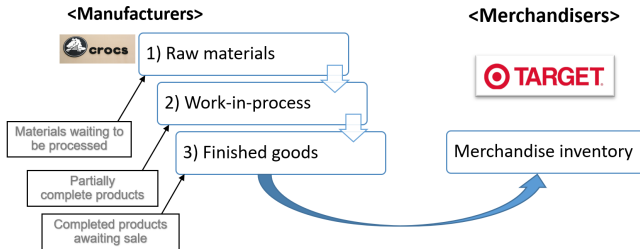
- Inventory is a **current asset**.
- Inventory is recorded at its **cost** (under the **cost principle**).
(i.e., how much the company paid to acquire the inventory.)

Cost Principle

Assets are initially recorded at their **acquisition cost**, which includes all costs necessary to acquire the asset and prepare it for its intended use.

Inventory - Concept

- For **manufacturing** firms, Inventory is the **raw materials**, **work-in-progress**, and **finished goods**.
- For **merchandising** firms, Inventory is the **goods that a company has purchased** but not yet sold.



Note: ACC250 focuses on **merchandising** companies (e.g., Amazon, Walmart, Target). ACC255 focuses on **manufacturing** companies (e.g., Apple, Tesla, GM).

Inventory Calculation Example

EX. How much inventory was sold (i.e., Cost of Goods Sold, COGS) given the following information?

- At the end of the last year, the inventory balance was \$100.
- In January, your company purchased \$600 additional inventories (i.e., Purchases).
- At the end of January, you found that the inventory balance (i.e., after selling some of it) is \$300.

Answer:

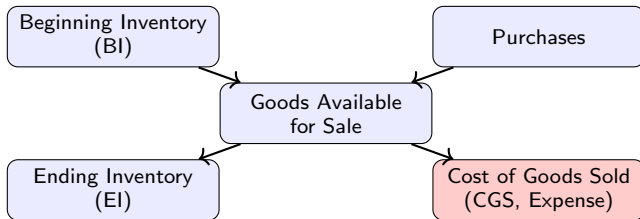
- Goods available for sale: $\$100 + \$600 = \$700$
- Cost of Goods Sold: $\$700 - \$300 = \$400$

Inventory Equation

End. Inventory = Beg. Inventory + Purchases - Cost of Goods Sold

Inventory is

- increased when purchased;
- decreased when sold.



EX 1. Suppose a company has the following information for the year:

- Beginning Inventory (BI): \$2,000
- Purchases: \$8,500
- Cost of Goods Sold: \$8,200

What is the Ending Inventory (EI) for the year?

- **Goods Available for Sale:** $\$2,000 + \$8,500 = \$10,500$
- **Ending Inventory:** $\$10,500 - \$8,200 = \$2,300$

EX 2. Suppose a company has the following information for the year:

- Beginning Inventory (BI): \$2,000
- Purchases: \$8,500
- Ending Inventory (EI): \$2,300

What is the Cost of Goods Sold (CGS) for the year?¹

- **Goods Available for Sale:** $\$2,000 + \$8,500 = \$10,500$
- **Cost of Goods Sold:** $\$10,500 - \$2,300 = \$8,200$

¹This calculation is required under Periodic Inventory System.

Similarities:

- Both Inventory and Supplies are assets.
- Both are current assets.
- Both are purchased from suppliers.
- Both are usually recorded with Accounts Payable.

Difference:

- Inventory is the goods that a company has purchased but not yet sold.
- Supplies are the goods that a company has purchased but not yet used.

Recall: Accounting for Supplies

- ① When purchased on account:

Supplies (+A)	50
Accounts Payable (+L)	50

- ② When supplies are used:

Supplies Expense (+E, -SE)	50
Supplies (-A)	50

Accounting for Inventory (with Cost of Goods Sold)

Inventory (Asset)

The total value of the goods held for sale in the ordinary course of business.

Cost of Goods Sold (Expense)

The cost of the goods sold during a period.

When inventory is purchased:

- 1 Inventory is recorded as an asset.
- 2 Cash should be paid now or in the future.

EX. The company purchased \$50 inventory on account:

Inventory (+A)	50
Accounts Payable (+L)	50

Accounting for Inventory (with Cost of Goods Sold)

When the inventory is sold:

- 1 Revenues are recorded.
- 2 Cash or Accounts Receivable is recorded.
- 3 Inventory is decreased.
- 4 Cost of Goods Sold is recorded (Matching Principle).

EX. The company sold the inventory for \$100 (, purchased for \$50) on account:

Accounts Receivable (+A)	100
Revenues (+R, +SE)	100

Cost of Goods Sold (+E, -SE)	50
Inventory (-A)	50

The two sets of entries are recorded when the inventory is sold!

Assets vs Expenses:

- Assets are resources that a company owns or controls.
- Expenses are resources that a company has used up to generate revenues.

Assets are turned into expenses when they are used up to generate revenues.

- Inventory is turned into Cost of Goods Sold when it is sold.
- Supplies are turned into Supplies Expense when they are used.
- Equipment is turned into Depreciation Expense when it is used.
- Prepaid Rent is turned into Rent Expense when it is used.

Inventory and Accounts Payable:

- Inventory is usually purchased on credit.
- Inventory purchases increase Accounts Payable.

Contractual terms for Accounts Payable (e.g., "2/30, n/60" or "2/30, g/60"):

- 2/30: the buyer can get a 2% discount if they pay within 30 days.
- 60: the buyer should pay the full amount within 60 days without any discount.

Note: The distinction between "n" vs "g" goes beyond the scope of this course. "n" means "net" method; "g" means "gross" method. **Net method** means that the buyer should pay the full amount without any discount. **Gross method** means that the buyer should pay the full amount with the discount.

Example

EX 1. A company purchases \$5,000 of inventory on account from a supplier with terms 2/30, n/60. If the company pays the invoice within 30 days, how much should be paid?

\$4,900 (after 2% discount)

EX 2. What if the company pays the invoice 45 days after the purchase?

\$5,000 (no discount)

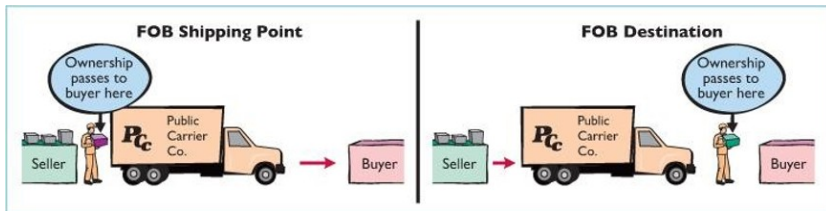
FOB shipping terms

FOB shipping point

- Ownership transfers to the buyer when goods leave the seller's location.
- The **buyer** is responsible for shipping costs.

FOB destination

- Ownership transfers to the buyer when goods arrive at the buyer's location.
- The **seller** is responsible for shipping costs.



Example

EX 1. Walmart purchased \$10,500 of bikes with FOB destination. Walmart doesn't pay the transportation cost.

Inventory (+A)	10,500
Accounts Payable (+L)	10,500

EX 2. Walmart purchased \$10,500 of bikes with FOB shipping point. Walmart must pay the transportation cost of \$200 to a trucker (cash).

Inventory (+A)	10,500
Accounts Payable (+L)	10,500

Inventory (+A)	200
Cash (-A)	200

- 1 Introduction to Inventory
- 2 **Inventory System**
 - Periodic Inventory System
 - Perpetual Inventory System
- 3 Journal Entries Related to Inventory
 - Inventory Purchase Transactions
 - Inventory Selling Transactions
- 4 Multistep Income Statements and Profit Ratios

- ❶ **Periodic inventory system**: Inventory is physically counted only at the end of reporting period.²
- ❷ **Perpetual inventory system**: Inventory is updated perpetually (i.e., every time inventory is bought, sold, or returned).
→ More accurate and modern when automated inventory tracking is available.

²This system seems easy to use, but journal entries are more complex. We do not cover journal entries for this system in this course.

Inventory is updated only at the end of reporting period.

- Beg. Inventory (BI) counted at the end of the prior period.
- Purchases counted during the period.
- Ending Inventory (EI) counted at the end of the period.
- CGS: inferred from the inventory equation:
→ CGS = BI + Purchases - EI.

EX 1. Our company counts inventory at the end of each month. The following information is available:

- Beginning Inventory (BI): \$100
- Purchases: \$200
- Ending Inventory (EI): \$150

What is the Cost of Goods Sold (CGS) for the month?

- CGS: **\$150**

Perpetual Inventory System

Inventory is updated perpetually (i.e., every time inventory is bought, sold, or returned).

- Every moment, we know **CGS** and **Inventory**.
- Inventory equation isn't needed to calculate **CGS**.

EX 1. BI= \$100. Consider the following transactions. What is the inventory balance at the end of each month? and what is the CGS? (\$ amounts are **acquisition costs**.)

Date	Purchases	Sales	Inventory Balance
Jan 1	\$300		<u>\$400</u>
Jan 10	\$100		<u>\$500</u>
Jan 20		\$200	<u>\$300</u>

- EI: **\$300**
- CGS: **\$200**

EX 2. BI= \$500. Consider the following transactions. What is the inventory balance at the end of each month? and what is the CGS? (\$ amounts are acquisition costs.)

Date	Purchases	Sales	Inventory Balance
Feb 1	\$200		<u>\$700</u>
Feb 5		\$100	<u>\$600</u>
Feb 10	\$100		<u>\$700</u>
Feb 15		\$200	<u>\$500</u>
Feb 28		\$200	<u>\$300</u>

- EI: 300
- CGS: 500

Once again, under Perpetual Inventory System,

- Inventory and CGS are updated every time inventory is bought and sold.
- Inventory equation is not needed to calculate the CGS.

Perpetual Inventory System and Inventory Shrinkage

From the previous example, what if EI is \$250 instead of \$300 when physically counted?

- Before counting, we thought the inventory was \$300.
- After counting, we found that the inventory is only \$250.
- Something is wrong with the inventory.
- This is called **Inventory Shrinkage**.
- Examples are damage, theft, vandalism, natural disaster, expiration, obsolete, etc.
- We need to record the inventory shrinkage as an expense.

CGS (+E, -SE)	<u>50</u>
Inventory (-A)	<u>50</u>

Inventory Shrinkage

- The difference between the inventory balance in the books and the inventory balance physically counted, resulting from losses such as damage, theft, etc.
- Inventory Shrinkage is recorded as an expense.

EX 1. Journal entries if \$1,000 from inventory equation, but only \$900 physically counted.

CGS (+E, -SE)	<u>100</u>
Inventory (-A)	<u>100</u>

EX 2. At the end of the accounting period, a company has the following information:

- Beginning Inventory: \$5,000
- Purchases during the period: \$2,000
- Cost of Goods Sold: \$4,500
- A physical count of inventory reveals only \$2,300 of inventory on hand.

Required:

- Calculate the amount of inventory shrinkage the company should record.
- Record the journal entry to record the inventory shrinkage.

Inventory Shrinkage Example

Solution:

Description	Amount (\$)
Beginning Inventory	5,000
Purchases during the period	2,000
Cost of Goods Sold	(4,500)
Ending Inventory (per books) [1]	<u>2,500</u>
Physical Count of Inventory [2]	<u>2,300</u>
Inventory Shrinkage ([1] - [2])	<u>200</u>

Journal Entry to Record Inventory Shrinkage:

CGS (+E, -SE)	<u>200</u>
Inventory (-A)	<u>200</u>

Table of Contents

- 1 Introduction to Inventory
- 2 Inventory System
 - Periodic Inventory System
 - Perpetual Inventory System
- 3 Journal Entries Related to Inventory**
 - Inventory Purchase Transactions
 - Inventory Selling Transactions
- 4 Multistep Income Statements and Profit Ratios

Perpetual inventory system:

- is used to demonstrate the accounting for inventory purchase and sale transactions.
- maintains the inventory and CGS on a perpetual basis.
- enables inventory and CGS to be updated every time inventory is bought or sold.
- is widely used in practice.

Note: The periodic inventory system requires the use of separate temporary accounts for PURCHASES, TRANSPORTATION, etc. This goes beyond the scope of this course.

Journal entries for Inventory Purchase Transactions

- ❶ Walmart receives \$10,500 of bikes purchased on account.

Inventory (+A)	10,500
Accounts Payable (+L)	10,500

- ❷ When buying the bikes, Walmart must pay the transportation cost of \$200 to a trucker (Cost Principle).

Inventory (+A)	200
Cash (-A)	200

- ❸ Walmart returned some of the bikes to the supplier and received a \$500 reduction in the balance owed.

Accounts Payable (-L)	500
Inventory (-A)	500

Journal entries for Inventory Selling Transactions

- Walmart sells four mountain bikes at a selling price of \$200 per bike, for a total of \$800 cash. The bikes had previously been recorded in Walmart's Inventory at a cost of \$175 per bike, for a total cost of \$700.

Cash (+A)	800
Revenues (+R, +SE)	800

Cost of Goods Sold (+E, -SE)	700
Inventory (-A)	700

After the above transactions, by how much have the following accounts changed?

Account	Balance
Cash	<u>600</u>
Accounts Payable	<u>10,000</u>
Inventory	<u>9,500</u>
Revenues	<u>800</u>
Cost of Goods Sold	<u>700</u>
Gross Profit	<u>100</u>

- 1 Introduction to Inventory
- 2 Inventory System
 - Periodic Inventory System
 - Perpetual Inventory System
- 3 Journal Entries Related to Inventory
 - Inventory Purchase Transactions
 - Inventory Selling Transactions
- 4 Multistep Income Statements and Profit Ratios

Single-Step Income Statement

ABC, Inc.
Income Statement
For the Years Ended Dec 31
(amounts in millions)

Account	2027	2026
Revenues:		
Net Sales	12,000	11,000
Expenses:		
Cost of Goods Sold	7,800	7,200
SG&A Expenses ³	2,000	1,900
Other Expenses (Net) ⁴	100	50
Income Tax Expense	630	555
Net Income	1,470	1,295

³SG&A stands for Selling, General, and Administrative Expenses, including a variety of operating expenses such as salaries and wages, utilities, and rent.

⁴Other Expenses (Net) includes miscellaneous expenses and revenues that do not involve the core business operations (e.g., interest expense or interest revenue). This goes beyond the scope of this course.

Multi-Step Income Statements

ABC, Inc.
Income Statement
For the Years Ended Dec 31
(amounts in millions)

Account	2027	2026
Net Sales	12,000	11,000
Cost of Goods Sold	7,800	7,200
Gross Profit	4,200	3,800
SG&A Expenses ⁵	2,000	1,900
Income from Operations	2,200	1,900
Other Expenses (Net) ⁶	100	50
Income before Income Tax	2,100	1,850
Income Tax Expense	630	555
Net Income	1,470	1,295

⁵SG&A stands for Selling, General, and Administrative Expenses, including a variety of operating expenses such as salaries and wages, utilities, and rent.

⁶Other Expenses (Net) includes miscellaneous expenses and revenues that do not involve the core business operations (e.g., interest expense or interest revenue). This goes beyond the scope of this course.

Net Sales

- Some customers (e.g., 3%) return the products they purchased.
- Firms record the estimated returns as **Sales Returns and Allowances**.⁷
- Firm's **Net Sales** is the total sales revenue minus the sales returns and allowances.
- Income Statement usually starts with **Net Sales**, but it depends on the firm's policy.

ABC, Inc.
Net Sales Calculation
For the Years Ended Dec 31
(amounts in millions)

Account	2027	2026
Sales Revenue	12,300	11,200
<u>Less: Sales Returns & Allowances</u>	300	200
<u>Net Sales</u>	<u>12,000</u>	<u>11,000</u>
Cost of Goods Sold	7,800	7,200
Gross Profit	4,200	3,800
...	...	...
...	...	...
Net Income	1,470	1,295

⁷**Sales Returns and Allowances** is a contra account that is used to record the estimated returns of sales. This goes beyond the scope of this course. We do not cover Sales Returns and Allowances in detail and the related journal entries.

Gross Profit

- A profitability measure that shows how much money is left over from revenues after accounting for the cost of goods sold.
- Calculated as: Net Sales – Cost of Goods Sold

Gross Profit Ratio (or Gross Profit Margin)

- A profitability ratio that measures how much gross profit is generated as a percentage of net sales.
- Calculated as: $\frac{\text{Gross Profit}}{\text{Net Sales}}$

- **2027:** $\frac{4,200}{12,000} = 0.35$ or 35%
- **2026:** $\frac{3,800}{11,000} \approx 0.345$ or 34.5%
- **Interpretation:** For every \$1 of sales, about 35 cents is gross profit in 2027.

Net Profit

- A profitability measure that shows how much money is left over from revenues after accounting for all expenses.
- Calculated as: Net Sales – All Expenses

Net Profit Ratio (or Net Profit Margin)

- A profitability ratio that measures how much **net income** is generated as a percentage of net sales.
- Calculated as: $\frac{\text{Net Income}}{\text{Net Revenues}}$
- **2027:** $\frac{1,470}{12,000} = 0.1225$ or 12.25%
- **2026:** $\frac{1,295}{11,000} \approx 0.1177$ or 11.77%
- **Interpretation:** For every \$1 of sales, about **12.25** cents is net profit in 2027.