ACC 1701X
Accounting for Decision Makers

Lecturer: Dr. Hanny Kusnadi

Prior Lecture Refresher

- CASH:
  - Contra-revenue accounts: sales discounts & returns (as deduction to get net sales)
  - Bank Reconciliation – reconciling bank statement balance with the book cash balance
- CURRENT LIABILITIES:
  - Known Liabilities (e.g. Accounts Payable, Sales Tax Payable, Payroll Liabilities, Unearned Revenue, Short Term Notes Payable)
  - Estimated Liabilities (e.g. Warranties/provision)
  - Contingent Liabilities
- FSA:
  - Current Ratio
  - Acid Test Ratio

Chapter 08

Inventory & Cost of Sales

Goals for Today

Concepts

- Inventory for merchandising companies
- Inventory systems – perpetual vs. periodic

Accounting Procedures

- Purchases, freight, discounts, returns.
- Inventory costing methods – FIFO, LIFO, specific identification, weighted average cost
- Lower of cost and Net Realizable Value (NRV) of Inventory → Inventory write-down

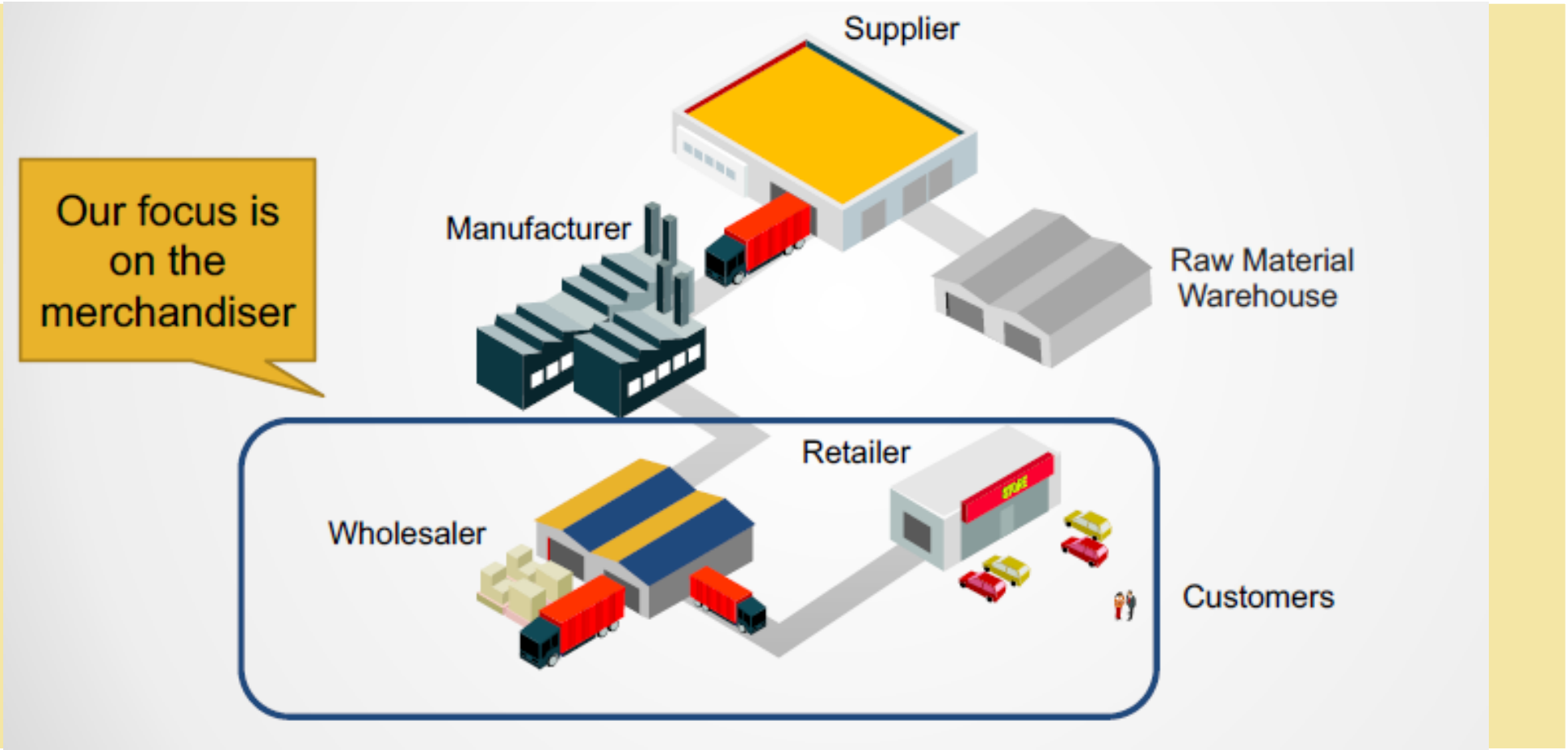
Financial Analysis

- Inventory Turnover
- Number of Days' Sales in Inventory
- Number of Days' Purchases in Accounts Payable

What are Merchandising Companies?

- Service Companies - sell services ("time") to earn revenues.
- **Merchandising Companies – sell products/goods to earn revenues.**

Simplified Supply Chain for Merchandise Inventory



What is Inventory?

Inventories are assets:

(a) Held for sale in the ordinary course of business

(b) In the process of production for such sale; or

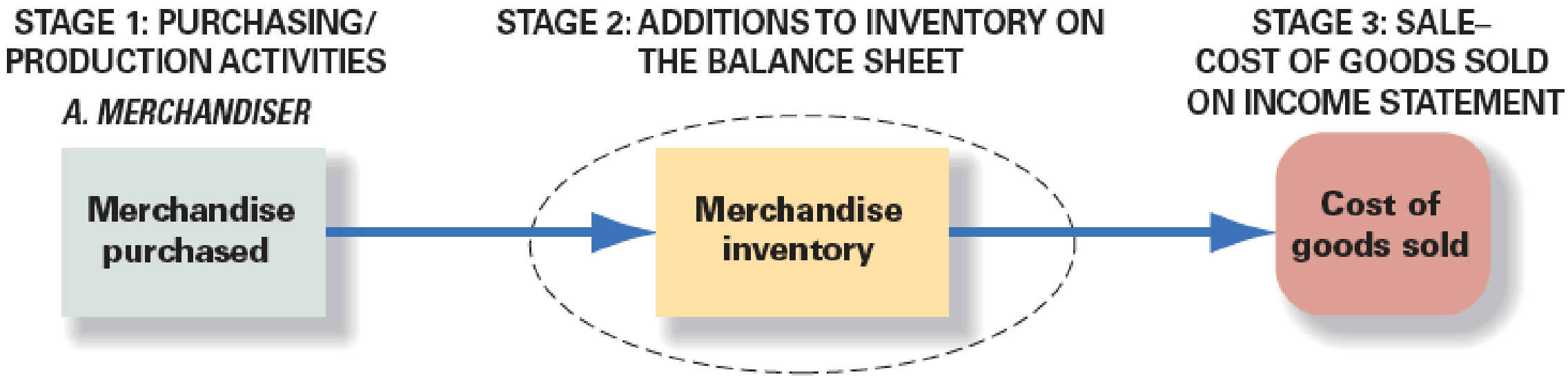
(c) In the form of materials or supplies to be consumed in the production process or in the rendering of services

Our Focus!

(*SFRS(I) 1-2: Inventories*

8 Inventories encompass goods purchased and held for resale including, for example, merchandise purchased by a retailer and held for resale, or land and other property held for resale. Inventories also encompass finished goods produced, or work in progress being produced, by the entity and include materials and supplies awaiting use in the production process. Costs incurred to fulfil a contract with a customer that do not give rise to inventories (or assets within the scope of another Standard) are accounted for in accordance with SFRS(I) 15 ***Revenue from Contracts with Customers***.

Flow of Inventory Costs



Importance of Inventories for Merchandiser:

- One of the largest assets on its Statement of Financial Position/Balance Sheet
- One of the largest expense (Cost of goods sold) on the Income Statement

➔Significant impact of inventories and COGS on the financial position and profitability of a merchandiser

Merchandising Companies – Inventory & COGS
NTUC FairPrice

NTUC FairPrice Statement of Financial Position (partial)

	Note	Group 2021 $'000	2020 $'000
Trade and other receivables	11	**216,886**	280,431
Inventories	12	**291,264**	356,611
Cash and cash equivalents	13	**535,438**	618,869
Total current assets		**1,043,588**	1,255,911

NTUC FairPrice Statement of Profit & Loss (partial)

	Note	Group 2021 $'000	2020 $'000
Revenue	21	**4,252,342**	4,507,232
Inventories consumed		**(3,043,635)**	(3,244,277)
Other income	22	**399,024**	400,314
Staff and related costs		**(699,467)**	(711,528)
Depreciation expense		**(383,559)**	(388,309)
Impairment loss on non-financial assets		**–**	(68,600)
Other operating expenses	23	**(426,089)**	(455,834)
Profit from operations		**98,616**	38,998

Source: NTUC FairPrice 2021 Annual Report

Merchandising Companies – Inventory & COGS
Sasa

Sasa Statement of Financial Position (partial)

	Note	2022 HK$'000	2021 HK$'000
Current assets			
Inventories	17	**747,946**	766,107
Trade receivables	18	**73,214**	76,972
Other receivables, deposits and prepayments	19	**180,129**	202,095
Time deposits	20	**241**	21,012
Cash and cash equivalents	20	**296,478**	505,392
Income tax recoverable		**10,400**	10,627
		1,308,408	1,582,205

Sasa Statement of Profit & Loss (partial)

	Note	2022 HK$'000	2021 HK$'000
Continuing operations			
Turnover	2	**3,412,727**	3,043,029
Cost of sales	5	**(2,152,181)**	(1,991,198)
Gross profit		**1,260,546**	1,051,831

Source: Sasa 2021 Annual Report

"Inventory" for a Property Developer CapitaLand

What is considered as "inventory" will depend on the company's business

BALANCE SHEETS

As at 31 December 2019

	Note	The Group 31 Dec 2019 $'000	The Group 31 Dec 2018 $'000	The Company 31 Dec 2019 $'000	The Company 31 Dec 2018 $'000
Non-current assets					
Property, plant and equipment	3	1,268,517	752,655	47,128	3,042
Intangible assets	4	988,081	634,715	436	405
Investment properties	5	48,731,897	39,445,960	–	–
Subsidiaries	6	–	–	15,511,154	12,060,311
Associates	7	8,080,868	6,207,264	–	–
Joint ventures	8	4,915,307	3,972,354	–	–
Deferred tax assets	9	353,816	285,490	423	423
Other non-current assets	10(a)	1,382,447	902,847	–	–
		65,720,933	52,201,285	15,559,141	12,064,181
Current assets					
Development properties for sale and stocks	11	7,725,059	5,128,551	–	–
Contract assets	27(b)	–	84,885	–	–
Trade and other receivables	12	2,301,597	1,944,064	889,759	1,166,485
Other current assets	10(b)	45,611	28,737	–	–
Assets held for sale	15	385,111	260,276	–	–
Cash and cash equivalents	16	6,167,606	5,059,839	18,098	15,156
		16,624,984	12,446,272	907,857	1,181,641

11 DEVELOPMENT PROPERTIES FOR SALE AND STOCKS

		The Group 2019 $'000	The Group 2018 $'000
(a)	Properties under development, units for which revenue is recognised over time		
	Land and land related cost	1,016,088	815,458
	Development costs	12,323	2,260
		1,028,411	817,718
	Allowance for foreseeable losses	(44,956)	(44,956)
		983,455	772,762
	Properties under development, units for which revenue is recognised at a point in time		
	Land and land related costs	3,194,164	2,270,562
	Development costs	1,791,660	1,349,701
		4,985,824	3,620,263
	Properties under development	5,969,279	4,393,025
(b)	Completed development properties, at cost	1,760,895	746,884
	Allowance for foreseeable losses	(6,159)	(12,130)
	Completed development properties	1,754,736	734,754
(c)	Consumable stocks	1,044	772
	Total development properties for sale and stocks	7,725,059	5,128,551

Source: CapitaLand's 2019 Annual Report

Inventory
What's counted in it?

Merchandise inventory includes all goods that a company owns and holds for sale, regardless of where the goods are located when inventory is counted.

Items requiring special attention include:

Goods in Transit
My inventory or your inventory??

Whether to include goods in transit as part of inventory goods depends on who has ownership of the goods.

Goods in transit reported as part of Buyer's inventory

Ownership passes to the buyer here.

Goods in transit reported as part of Seller's inventory

Goods on Consignment

- Goods we OWN but are on display for sale at another place of business
- Ownership is still with the Consignor (even though item is with Consignee) so it is still part of consignor's inventory.

Cost of Inventory (Merchandising Companies) What's included in it?

SFRS(I) 1-2: Inventories - The cost of inventories shall comprise all costs of purchase, cost of conversion and other costs incurred in bringing the inventories to the present location and condition.

- Inventory is recorded at **cost**, and includes all expenditures necessary to bring an item to a sellable condition and location:
  - Invoice cost
  - Freight/Transportation cost
  - Insurance cost (during shipment)
  - Storage cost (during shipment)
  - Import taxes/duties
  - Less any purchase discounts/returns

- Note: costs incurred after inventory is ready for use is NOT included! (e.g. marketing costs, salesperson salaries, financing cost, warehouse costs, retail store costs)

Inventory System
Perpetual vs. Periodic

Perpetual system

- Up-to-date record of inventory is maintained
- Inventory purchases are directly added to Inventory account
- Transaction-by-transaction record is recorded during the period
- Information on COGS and ending inventory is typically available on a continuous (perpetual) basis

Periodic system

- No up-to-date record of inventory during the accounting period
- Inventory purchases are recorded in a temporary account called “Purchases” (not directly added to Inventory account)
- Actual physical count of inventory is done at the end of the period
- COGS is then calculated *indirectly* using the COGS equation.

Perpetual Inventory System: Purchasing and Selling Inventory

Perpetual system: continually update Inventory account for merchandising transactions

Inventory Account

Record INCREASE when goods are PURCHASED

Record DECREASE when goods are SOLD (as COGS)

Skye Company bought merchandise inventory from its supplier : $5,000 for cash and $3,000 on credit.

Inventory	$5,000		
Cash			$5,000
Inventory	$3,000		
Accounts Payable			$3,000

Skye Company sold $9,000 of merchandise on credit. The merchandise costs $4,800.

Accounts Receivable	$9,000		
Sales Revenue			$9,000
Cost of Goods sold	$4,800		
Inventory			$4,800

NOTE: Sales and COGS are typically recorded as a normal journal entry at the time of transaction. An AJE at the end of the period is only needed to adjust for any unrecorded accrued sales.

Periodic Inventory System: COGS Equation

Beginning Inventory + **Net Inventory Purchases**

= Cost of Goods Available For Sale

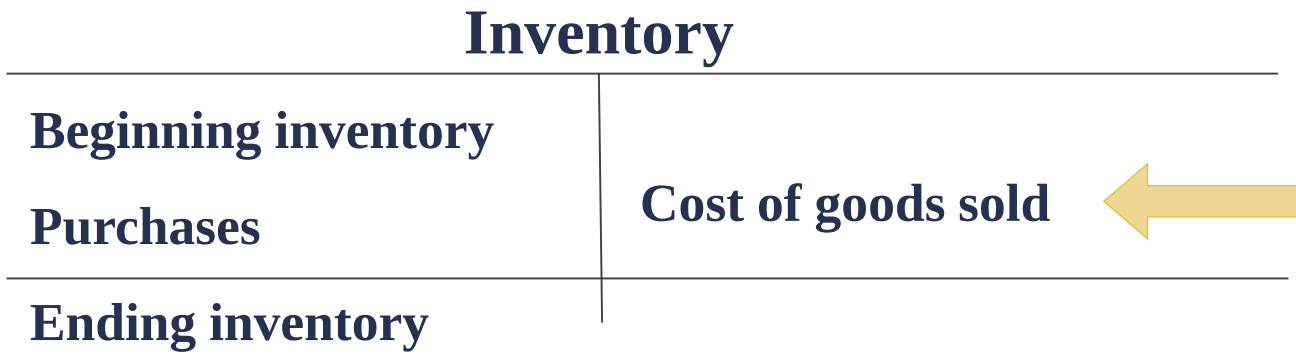
Ending Inventory *(remaining inventory)* + **Cost of Goods Sold** *(sold inventory)*

- Beginning inventory + Net Purchases = Cost of Goods Available for Sale
- Cost of Goods Available for Sale – Ending inventory = Cost of goods sold

➔ **COGS = Beg Inventory + Net Purchases – End Inventory**

Periodic Inventory System: Recording Purchases & Deriving COGS

Under periodic system, purchases for inventory are recorded in a temporary "Purchases" accounts, which will be closed to the Inventory account at the end of the period.



COGS is derived indirectly from the COGS equation

- For example: ReadMe Magazines Co. purchased $7,000 of magazines for resale:

Dr	Purchases		$7,000	
	Cr	Cash/Accounts Payable		$7,000

- ReadMe uses the COGS equation to derive its COGS for the period:

Beg Inventory Balance	$10,000
Add: Net Purchases	$7,000
Less: Cost of Goods Sold	?
End Inventory (physical stock count)	$ 8,000

➔ **COGS = $9,000** ($10,000 +7,000 – 8,000)

Perpetual vs. Periodic
Decathlon Example: Merchandise Purchasing

Purchasing merchandise for resale from supplier.

Perpetual System

- On Sept 1, Decathlon purchased 800 footballs @$10 each on credit from its supplier:

Inventory ($10 x 800)	$8,000	
Accounts Payable		$8,000

➔ The merchandise Inventory balance is $8,000.

Periodic System

- On Sept 1, Decathlon purchased 800 footballs @$10 each on credit from its supplier:

Purchases	$8,000	
Accounts Payable		$8,000

➔ No merchandise Inventory balance, as the purchase of merchandise is currently in the temporary account "Purchases". Purchases account balance is $8,000.

Perpetual vs. Periodic
Decathlon Example: Transportation Costs

Who Pays?

	Ownership transfers when goods passed to:	Transportation costs paid by:	Accounting for transportation costs:
FOB shipping	Carrier	Buyer	Included in buyer's inventory cost
FOB destination	Buyer	Seller	Selling expense in seller's accounts

Perpetual System

- On Sept 5, Decathlon purchased 320 more footballs at $10 each on credit with terms FOB shipping point. Transportation charge $250 is paid in cash.

Inventory ($3,200 + 250)	$3,450	
Accounts Payable		$3,200
Cash		$ 250

➔The merchandise Inventory balance is now $11,450 ($8,000 + 3,450)

Periodic System

- On Sept 5, Decathlon purchased 320 more footballs at $10 each on credit with terms FOB shipping point. Transportation charge $250 is paid in cash.

Purchases	$3,200	
Freight-in	$ 250	
Accounts Payable		$3,200
Cash		$ 250

➔The Purchases account balance is $11,200 ($8,000 + $3,200)

Perpetual vs. Periodic: Decathlon Example - Returns

Merchandise returned by the purchaser to the supplier (e.g. due to defect)

Perpetual System

- On Sept 6, Decathlon returns 140 footballs (bought at $10 each previously) to its supplier:

Accounts Payable	$1,400	
Inventory (140 x $10)		$1,400

➔The merchandise Inventory balance is now $10,050 ($11,450 - $1,400).
➔Decathlon now has 980 (800 + 320 – 140) footballs in its inventory

Periodic System

- On Sept 6, Decathlon returns 140 footballs (bought at $10 each previously) to its supplier:

Accounts Payable	$1,400	
Purchase Returns		$1,400

➔ The Purchases balance is still $11,200, because the return is currently being accounted for in the temporary "Purchase Returns" account.

Perpetual vs. Periodic: Decathlon Example - Discounts

Discounts can induce early payment of the amount due.

Perpetual System

- For both the Sept 1 and Sept 5 purchases, the credit term is 2/10,n/30. Decathlon pays both invoices on Sept 8 (within 10 days).
- Invoice total = $8k + $3.2k - $1.4k = $9.8k

Accounts Payable	$9,800	
Inventory (2%x$9.8k)		$196
Cash		$9,604

➔ The merchandise Inventory balance after this transaction is $9,854 ($10,050 - $196).

Periodic System

- For both the Sept 1 and Sept 5 purchases, the credit term is 2/10,n/30. Decathlon pays both invoices on Sept 8 (within 10 days).
- Invoice total = $8k + $3.2k - $1.4k = $9.8k

Accounts Payable	$9,800	
Purchase Discounts		$196
Cash		$9,604

➔ The Purchases account balance is still $11,200, because the discount is currently being accounted for in the temporary “Purchase discount” account.

Perpetual System
Decathlon Example: Cost of Inventory

Decathlon's cost for each football:

Total purchase price ($8,000+$3,200)	$11,200
Plus: Freight in	250
Less: Purchase returns (140 footballs)	(1,400)
Less: Purchase discounts	(196)
Total cost of footballs (980 footballs)	$9,854

Total cost $9,854 ÷ 980 football = $ 10.06 per football

Perpetual vs. Periodic: Decathlon Example - Merchandise Sales

Selling of merchandise inventory and its effect on inventory account under the two systems:

Perpetual System

- Decathlon sold 500 footballs for $14 each on credit. Cost of each football is $10.06.

Accounts Receivable	$7,000	
Sales Revenue (500 x $14)		$7,000
Cost of Goods Sold	$5,030	
Inventory ($10.06 x 500)		$5,030

➔The merchandise Inventory balance is now $4,824 ($9,854 - $5,030). There is now 480 footballs left in the inventory record.

Periodic System

- Decathlon sold footballs for $7,000 on credit.

Accounts Receivable	$7,000	
Sales Revenue		$7,000

➔Under the periodic system, it is not known how many of the footballs have been sold, only the sales amount is known.

➔ COGS cannot be recorded at the time of sale because it is not known how much is COGS.

Periodic System: Decathlon Example - Deriving Net Purchases & COGS

- Under periodic system, the temporary accounts for purchases, discounts, returns & freight will be closed into the inventory account to derive the "Net Purchase" amount:

Inventory	$9,854	
Purchase Returns	$1,400	
Purchase Discounts	$ 196	
Freight-in		$ 250
Purchases		$11,200

Net Purchases

- Let's assume that a physical inventory count at period end indicates that only 468 footballs are still in the inventory (not yet sold). Therefore, period end inventory value is $4,706 (468 * ($9,854 / 980)).

➔ COGS = Beg Inventory + Net Purchases – End Inventory

COGS = $0* + $9,854 - $4,706 (**Assume that Decathlon had no beg inventory)*

COGS = $5,148

➔ Journal entry to record COGS:

Cost of Goods Sold	$5,148	
Inventory		$5,148

Perpetual System
Adjustment for Inventory Shrinkage

A merchandiser using a perpetual inventory system is usually required to make an adjustment to update Inventory account to reflect any loss of merchandise, including theft and deterioration.

- Decathlon's inventory account from its system shows 480 balls, but physical count reveals only $468 footballs → 12 footballs missing (lost/stolen)
- Decathlon must record an inventory shrinkage for the missing footballs:

Cost of Goods Sold	$120.72	
Inventory (12 X $10.06)		$120.72

<u>Advantages of a Perpetual System over Periodic System:</u>

- Physical count helps to either confirm the amount in the accounting system or highlight shortages of inventory (e.g. Decathlon example above illustrates that from the physical count it was able to determine that 12 footballs were missing), which would not be possible under the periodic system.

Inventory Costing Methods

Prices of goods are always changing → result in changes in inventory costs

- E.g. Cramer Electronic
  - Jan 1 : Beginning inventory of 5 rice cookers bought at $100 in prior period
  - Jan 10 : Bought 10 rice cookers from supplier for $120 each
  - Jan 15 : Sold 8 rice cookers to customer

Q: What amount of COGS should Cramer record for the Jan 15 sale?

A: Depends on the type of inventory costing method that Cramer uses.

- There are **FOUR** inventory costing methods:

1) Specific Identification Method

2) FIFO (first-in, first-out)

3) *LIFO (last-in, first-out)* – Not accepted under IFRS!

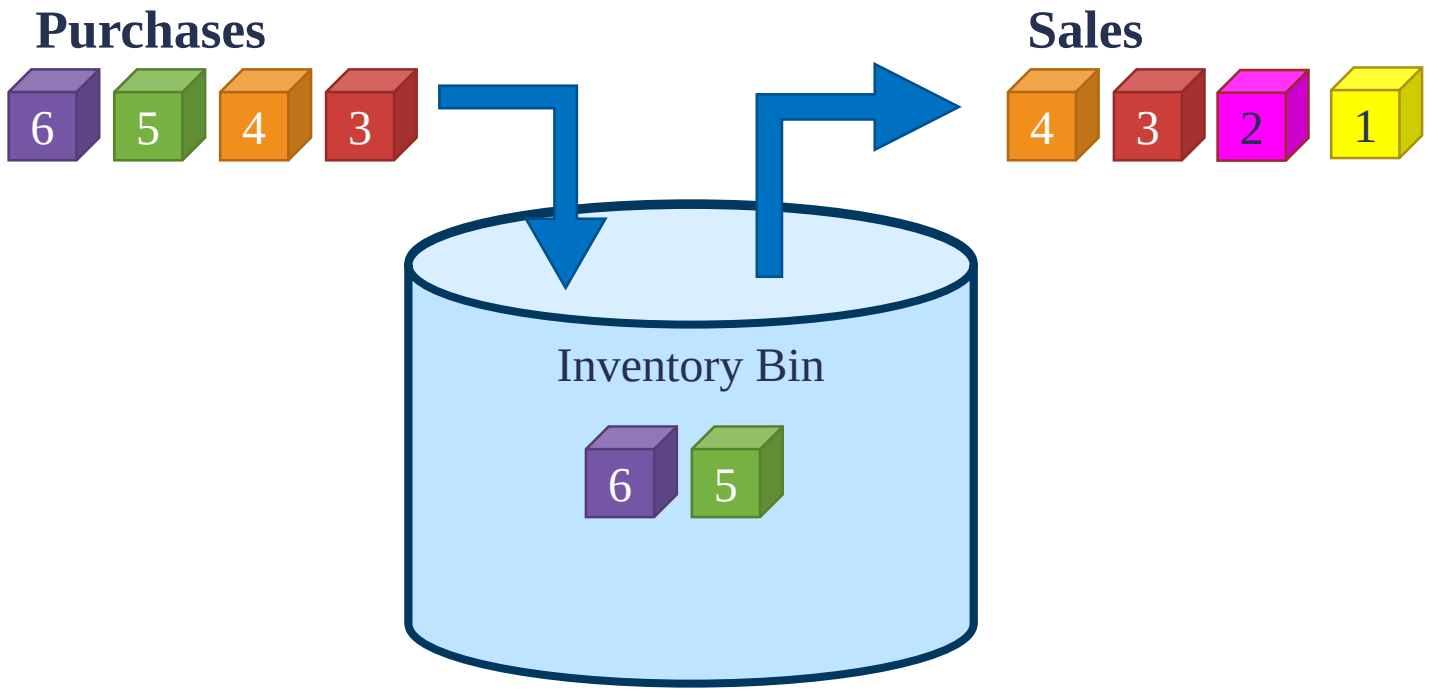
4) Weighted Average cost

1) Specific Identification Method

- When specific units are sold, the specific cost of that unit is recorded as COGS.
- Impractical to use for large quantities of similar items being sold (e.g. toothpaste, clothing etc…)
- Typically used when dealing with expensive unique items (e.g. houses, expensive fine jewelry, unique custom made cars etc…) where costs can be easily tracked to specific item

2) FIFO (First-in, First-out)

- As the name suggests, the first goods purchased (i.e. first-in) are considered the first goods to be sold (i.e. first-out).



- Imagine an Inventory bin, with beginning inventory (item 1 & 2).
- Company purchase 4 new items (item 3-6) to add into inventory.
- Company sold 4 items → based on FIFO, items considered sold are items 1,2,3 & 4.
- Company's ending inventory are item 5 and 6.

2) FIFO
Computers, Inc. Example

Computers, Inc. has the following information for its inventory. It uses FIFO inventory costing method.

- Beg inventory of 1,000 units
- Purchased total of 1,250 units
- Sold 1,050 units on December 1st.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00

Questions:

a) How much is COGS using the FIFO method?

b) How much is left in ending inventory?

2) FIFO
Computers, Inc. Example - COGS

- Computers, Inc. sold 1,050 units on December 1st.
- Remember, first ones in are the first ones out, therefore we will consider items sold are the 1,000 units that was in beginning inventory, and 50 units from the Jan. 3 purchases.

➔ **COGS = (1,000 x $5.25) + (50 x $5.30) = $5,515**

Given Information				Ending Inventory	Cost of Goods Sold		
Beg. Inv.	1,000	@	$5.25		1,000	@	$5.25
Jan. 3	500	@	5.30		50	@	5.30
June 20	300	@	5.60				
Sept. 15	250	@	5.80				
Nov. 29	200	@	5.90				
					1,050	Units	
					$5,515	Cost	

2) FIFO
Computers, Inc. Example – Ending Inventory

- Under the FIFO method the ending inventory will consists of the goods last purchased.

➔**Ending Inventory = (450 x $5.30) + (300 x $5.60) + (250 x $5.80) + (200 x $5.90)**
= $6,695

Given Information				Ending Inventory			Cost of Goods Sold			
Beg. Inv.	1,000	@	$5.25				1,000	@	$5.25	
Jan. 3	500	@	5.30	450	@	$5.30	50	@	5.30	
June 20	300	@	5.60	300	@	$5.60				
Sept. 15	250	@	5.80	250	@	$5.80				
Nov. 29	200	@	5.90	200	@	$5.90				
				1,200	Units		1,050	Units		
				$6,695	Cost		$5,515	Cost		

2) FIFO
Computers, Inc. Example

THEREFORE,

Under the FIFO method, the COGS for the 1,050 units sold during the period is $5,515.

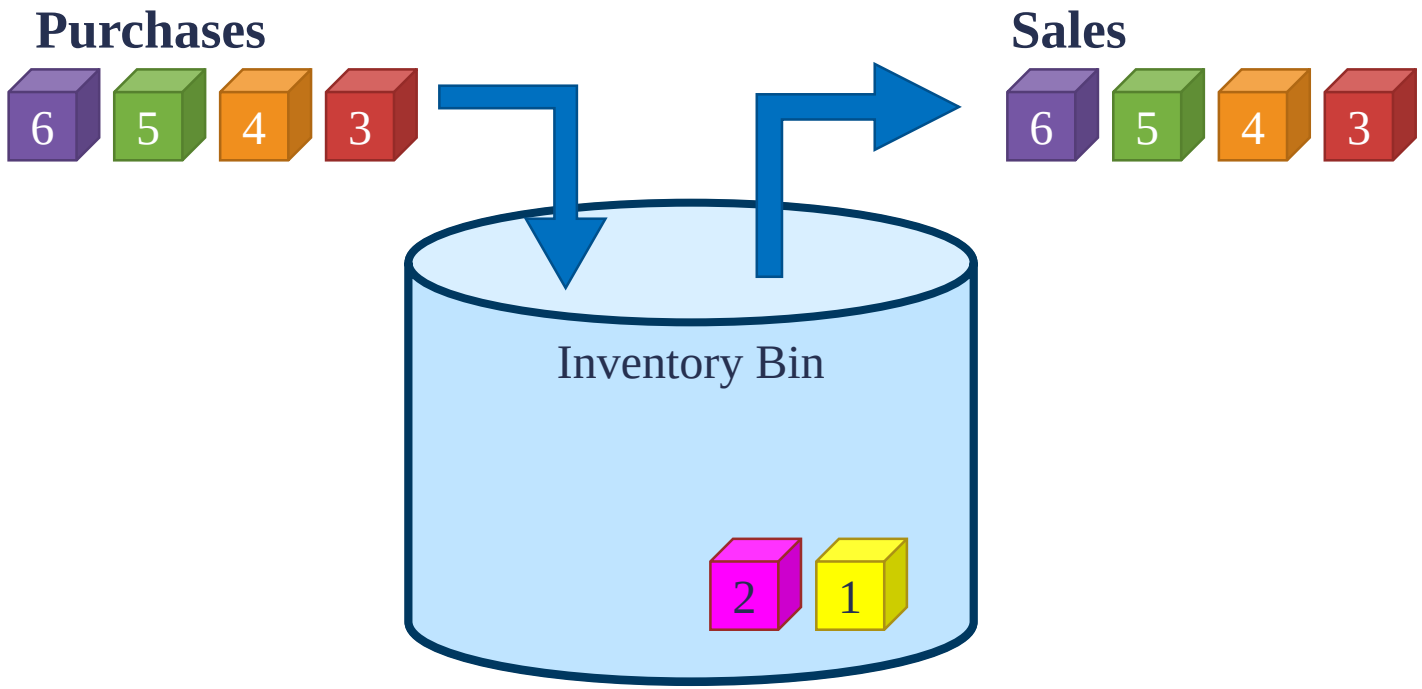
And the ending inventory balance is $6,695.

Computers, Inc. Mouse Pad Inventory			
Date	Units	$/Unit	Total
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00
Goods Available for Sale	2,250		$ 12,210.00
Ending Inventory	1,200		$ 6,695.00
Cost of Goods Sold	1,050		$ 5,515.00

3) LIFO (Last-in, First-out)

~ NOT ACCEPTED UNDER IFRS ~

- As the name suggests, the last goods purchased (i.e. last-in) are considered the first goods to be sold (i.e. first-out).



- Imagine an Inventory bin, with beginning inventory (item 1 & 2).
- Company purchase 4 new items (item 3-6) to add into inventory.
- Company sold 4 items → based on LIFO, items considered sold are items 3,4,5 & 6.
- Company's ending inventory are item 1 and 2.

3) LIFO
Computers, Inc. Example

Using back Computers, Inc. example from earlier. Assume now that it is on LIFO inventory costing method:

- Beg inventory of 1,000 units
- Purchased 1,250 units
- Sold 1,050 units on Dec 1st

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00

Questions:

a) How much is COGS using the LIFO method?

b) How much is left in ending inventory?

3) LIFO
Computers, Inc. Example

- Computers, Inc. sold 1,050 units on Dec 1st.
- Remember, last ones in are the first ones out, therefore we will consider items sold are the 200 units from Nov 29 purchases, 250 units from Sept 15 purchases, 300 units from June 20 purchases and 300 units from Jan 3 purchases.

➔ **COGS = (200 x $5.90) + (250 x $5.80) + (300 x $5.60) + (300 x $5.30) = $5,900**

Given Information				Ending Inventory	Cost of Goods Sold		
Beg. Inv.	1,000	@	$5.25				
Jan. 3	500	@	5.30		300	@	$5.30
June 20	300	@	5.60		300	@	5.60
Sept. 15	250	@	5.80		250	@	5.80
Nov. 29	200	@	5.90		200	@	5.90
					1,050	Units	
					$5,900	Cost	

3) LIFO
Computers, Inc. Example

- Under the LIFO method, the ending inventory will consists of the goods first purchased.

➔ **Ending Inventory = (1000 x $5.25) + (200 x $5.30) = $6,310**

Given Information				Ending Inventory			Cost of Goods Sold			
Beg. Inv.	1,000	@	$5.25	1,000	@	$5.25				
Jan. 3	500	@	5.30	200	@	5.30	300	@	$5.30	
June 20	300	@	5.60				300	@	5.60	
Sept. 15	250	@	5.80				250	@	5.80	
Nov. 29	200	@	5.90				200	@	5.90	
				1,200	Units		1,050	Units		
				$6,310	Cost		$5,900	Cost		

FIFO vs. LIFO Comparison!

Computers, Inc. Example

- **Now let's compare the COGS reported under FIFO versus LIFO:**

FIFO

COGS = $5,515

Computers, Inc. Mouse Pad Inventory			
Date	Units	$/Unit	Total
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00
Goods Available for Sale	2,250		$ 12,210.00
Ending Inventory	1,200		$ 6,695.00
Cost of Goods Sold	1,050		$ 5,515.00

LIFO

COGS = $5,900

Computers, Inc. Mouse Pad Inventory			
Date	Units	$/Unit	Total
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00
Goods Available for Sale	2,250		$ 12,210.00
Ending Inventory	1,200		$ 6,310.00
Cost of Goods Sold	1,050		$ 5,900.00

- **Different inventory costing method can give you very different COGS!**

4) Average Cost Method

- Also known as “weighted average cost method”
- When a unit is sold, the average cost per unit in inventory is assigned to COGS.
- The average cost per unit is calculated as follows:

$$\text{Average Cost per Unit} = \text{Cost of Goods Available for Sale} \div \text{Number of Units Available for Sale}$$

$$\text{COGS} = \left(\text{Cost of Items 1-6} \div 6 \text{ units}\right) \times \text{Units Sold}$$

4) Average Cost Method
Computers, Inc. Example

- Using back Computers, Inc. example from earlier. Assume now that it is on average cost inventory costing method:

Weighted Average Cost

$$\frac{\$\ 12,210}{2,250} = \$5.42667$$

Therefore,

Ending Inventory = 1,200 x $5.427
= $6,512

COGS = 1,050 x $5.427
= $5,698.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	500	5.30	2,650.00
June 20	300	5.60	1,680.00
Sept. 15	250	5.80	1,450.00
Nov. 29	200	5.90	1,180.00
Goods Available for Sale	2,250		$ 12,210.00
Ending Inventory	1,200		$ 6,512.00
Cost of Goods Sold	1,050		$ 5,698.00

Comparison of Methods

Effect on Income Statement of Computers, Inc.

What is the impact of using different inventory methods on Net Income?

- The following shows the Income Statement of Computers, Inc., where all items are the same except for the COGS and Ending Inventory balance:

Computers, Inc.
Income Statement
For Year Ended December 31, 2019

	FIFO	LIFO	Weighted Average
Net sales	$ 25,000	$ 25,000	$ 25,000
Cost of goods sold:			
Merchandise inventory, beginning	$ 5,250	$ 5,250	$ 5,250
Net purchases	6,960	6,960	6,960
Goods available for sale	$ 12,210	$ 12,210	$ 12,210
Merchandise inventory, ending	6,695	6,310	6,512
Cost of goods sold	$ 5,515	$ 5,900	$ 5,698
Gross profit	$ 19,485	$ 19,100	$ 19,302
Operating expenses	750	750	750
Income before taxes	$ 18,735	$ 18,350	$ 18,552
Income taxes expense (30%)*	5,621	5,505	5,566
Net income	$ 13,114	$ 12,845	$ 12,986

* Tax expense amounts were rounded.

Comparison of Methods

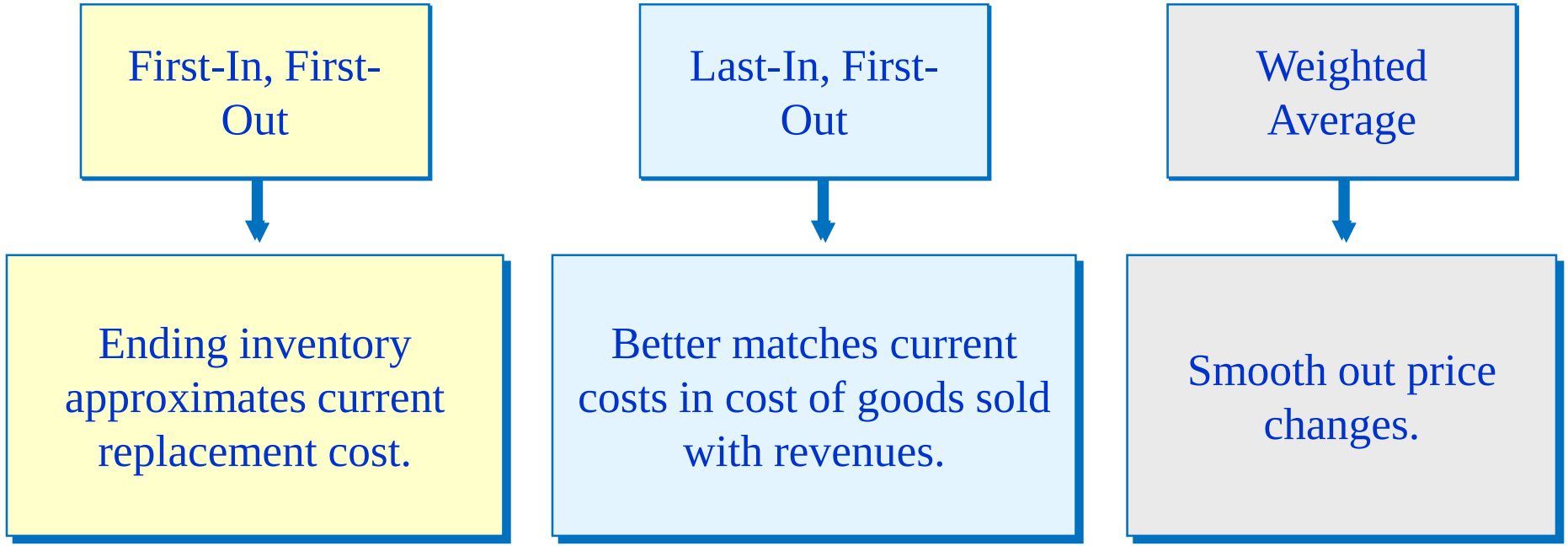
Effect on Financial Statements

- In periods of <u>rising costs</u>:
  - FIFO will give the **lowest** COGS amount, because it uses the older costs which tend to be lower → higher net income.
  - LIFO will give the **highest** COGS amount, because it uses the most recent costs which tend to be higher → lower net income.
  - Weighted Average will give a COGS amount that falls between FIFO and LIFO.

- In periods of declining costs:
  - FIFO will give the highest COGS amount → lower net income
  - LIFO will give the lowest COGS amount → higher net income
  - Weighted Average will give a COGS amount that typically falls between FIFO and LIFO.

Comparison of Methods

Advantages of different methods



- Which method do companies choose?
  - Depends on net income effects and income tax effects.
  - Companies can choose its inventory costing method, as long as it is used on a ***consistent*** basis (i.e. cannot change method every year!)
  - Note: U.S. GAAP allows either of all methods, but **IFRS do NOT allow the use of LIFO.**

NTUC FairPrice & Takashimaya
Notes on Inventories – Costing Method

FairPrice

3.8 Inventories

Inventories are measured at the lower of cost and net realisable value. The cost of inventories is based on the weighted average method, and includes expenditure incurred in acquiring the inventories and other costs incurred in bringing them to their existing location and condition.

Net realisable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and estimated costs necessary to make the sale.

Takashimaya

(g) Inventories

Inventories held by the Companies were measured at cost (book value is reduced on the basis of declines in profitability) determined by the following method.

Merchandise:	principally retail method and specific identification method
Products:	principally first-in, first-out method
Work in process:	principally specific identification method
Raw materials:	principally first-in, first-out method
Supplies:	principally first-in, first-out method

Valuation of Inventory @ Lower of Cost or Net Realizable Value

Ending inventory has to be reported at the **lower of cost or market value**.

- Meaning that if the replacement cost of the same goods in inventory is lower than the inventory cost, it has to report the market value instead.
- *E.g. GoodBottle Co. has ending inventory of bottles which cost $100. However, the current replacement cost of such bottles is now $80 (meaning that the suppliers have reduced the price and is now selling them for only $80). Thus, GoodBottle Co. has to report an ending inventory of $80 instead of $100.*

- Market value – determined as the **net realizable value (NRV)**, which is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.
- NRV can be applied in two ways:

(1) Separately to each individual item

(2) To major categories of assets

Lower of Cost and NRV – Writing down inventory

Dell Inc. Example

Dell Inc. has ending inventory of Intel chips and Seagate drives as follows:

Item	Quantity	Cost / item	NRV / item	*Lower of cost or NRV*	Ending Inventory at Lower of Cost and NRV
Intel Chips	10,000	$200	**$150**	*$150*	**10,000 x $150 = $1.5m**
Seagate Drives	8,000	**$100**	$120	*$100*	**8,000 x $100 = $800k**

- Dell has to report the Intel Chips at its NRV value (as NRV is lower than cost).
- Since Intel Chips inventory balance at cost is $2M (10,000 x $200).
- But its NRV is $1.5M → Dell has to recognize a $0.5M **inventory write-down** and report it as part of its COGS:

Cost of Goods Sold	$500,000	
Allowance for Inventory Write-down		$500,000

a contra-asset account to Inventory

- Dell continues to report its Seagate drives inventory at cost ($800k).

Inventory Write down
COGS or Impairment Expense?

- Inventory is reported **net** of the inventory account and the contra-asset account (Allowance for inventory write-down):

Inventory

Less: Allowance for Write-down

Net Inventory

Statement of Financial Position

- There are differences in practice on how to record the write down of inventory:

  (1) Can be recorded as part of COGS

  (2) Can also be recorded separately as a separate expense (e.g. Impairment Loss on inventory). Such inventory is what we refer to as "obsolescence"

Sasa
Inventory & Provision (Allowance for writedowns)

17 Inventories

Accounting Policy

Inventories comprise merchandise and are stated at the lower of cost and net realisable value.

Cost represents the invoiced cost of inventories plus the applicable freight and duties. Costs are assigned to individual items on the weighted-average basis. Net realisable value is the estimated selling price in the ordinary course of business, less applicable variable selling expenses.

Please refer to **Critical Accounting Estimates and Judgements (ii)** for estimates and judgements on provision for inventory.

17 Inventories (continued)

	2022 HK$'000	2021 HK$'000
Merchandise for resale	**747,946**	766,107

The cost of inventories recognised in cost of sales amounted to HK$2,143,231,000 (2021: HK$1,947,881,000).

During the year, the Group has made provision of HK$8,950,000 (2021: HK$43,317,000) for slow moving inventories and shrinkage.

Refer also to Sasa 2021 Annual Report - Note 5 (Cost of Sales)

Effect of Inventory errors on FS

Income Statement Effects

Inventory Error	Cost of Goods Sold	Net Profit
Understate ending inventory	Overstated	Understated
Understate beginning inventory	Understated	Overstated
Overstate ending inventory	Understated	Overstated
Overstate beginning inventory	Overstated	Understated

Statement of Financial Position Effects

Inventory Error	Assets	Equity
Understate ending inventory	Understated	Understated
Overstate ending inventory	Overstated	Overstated

Goals for Today

Concepts

- Inventory for merchandising companies
- Inventory systems – perpetual vs. periodic

Accounting Procedures

- Purchases, freight, discounts, returns.
- Inventory costing methods – FIFO, LIFO, specific identification, weighted average cost
- Lower of cost and Net Realizable Value (NRV) of Inventory → Inventory write-down

Financial Analysis

- Inventory Turnover
- Number of Days' Sales in Inventory
- Number of Days' Purchases in Accounts Payable

Assessing Efficiency and Liquidity
Inventory Turnover & Days' Sales in Inventory

Inventory Turnover

$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Average Inventory}}$$

- Measures how many times a company turns over (sells) its inventory
- Useful to assess if company is controlling inventory well

Number of Days' Sales in Inventory

$$\text{Days' Sales In Inventory} = \frac{365}{\text{Inventory Turnover}}$$

- Measures how much inventory is available in terms of number of days' sales – estimates how many days on average it will take to convert inventory into cash/AR.

Inventory Turnover & Days' Sales in Inventory
An example: NTUC FairPrice

IS

	Note	Group 2021 $'000	2020 $'000
Revenue	21	**4,252,342**	4,507,232
Inventories consumed		**(3,043,635)**	(3,244,277)

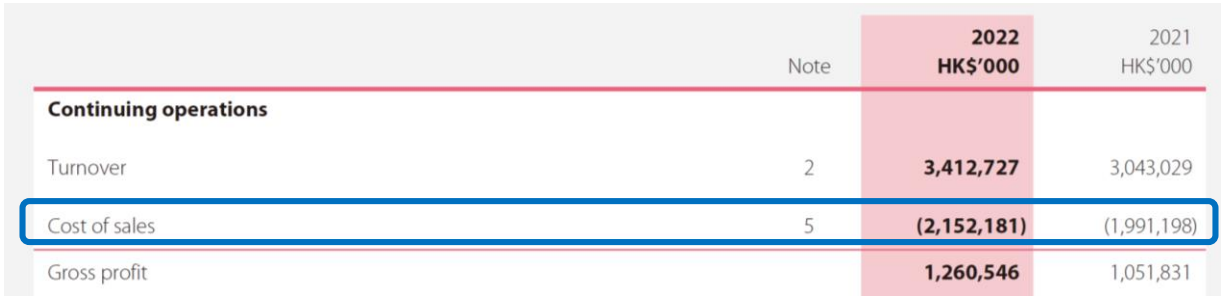
SFP

Current assets			
Trade and other receivables	11	**216,886**	280,431
Inventories	12	**291,264**	356,611
Cash and cash equivalents	13	**535,438**	618,869
Total current assets		**1,043,588**	1,255,911
Total assets		**6,046,848**	5,942,999

	2021	2020	2019
Beg Inventory	356,611	298,763	279,574
End Inventory	298,264	356,611	298,763
Average Inventory	323,938	327,687	289,168.5
Cost of Sales	3,040,635	3,244,277	2,646,510
Inventory Turnover	**9.39**	**9.90**	**9.15**
Day's Sales in Inventory	**38.89**	**36.87**	**38.4**

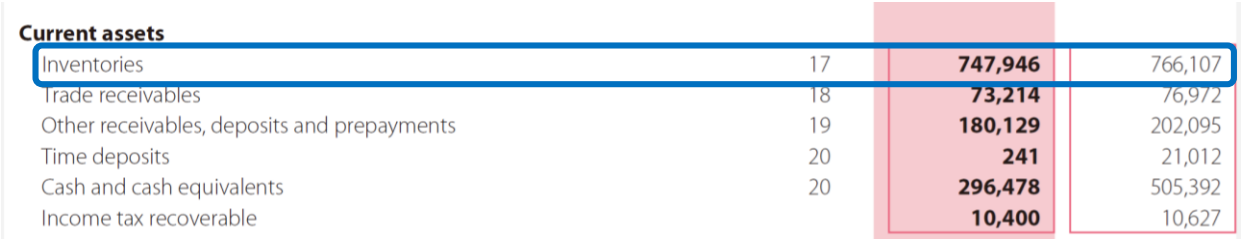
Inventory Turnover & Days' Sales in Inventory
An example: Sasa

IS



	Note	2022 HK$'000	2021 HK$'000
Continuing operations			
Turnover	2	**3,412,727**	3,043,029
Cost of sales	5	**(2,152,181)**	(1,991,198)
Gross profit		**1,260,546**	1,051,831

SFP



Current assets			
Inventories	17	**747,946**	766,107
Trade receivables	18	**73,214**	76,972
Other receivables, deposits and prepayments	19	**180,129**	202,095
Time deposits	20	**241**	21,012
Cash and cash equivalents	20	**296,478**	505,392
Income tax recoverable		**10,400**	10,627

	2022	2021	2020
Beg Inventory	766,107	1,005,900	1,413,726
End Inventory	747,946	766,107	1,005,900
Average Inventory	757,027	886,004	1,209,813
Cost of Sales	2,152,181	1,991,198	3,634,818
Inventory Turnover	2.84	2.25	3.00
Day's Sales in Inventory	128.39	162.41	121.49

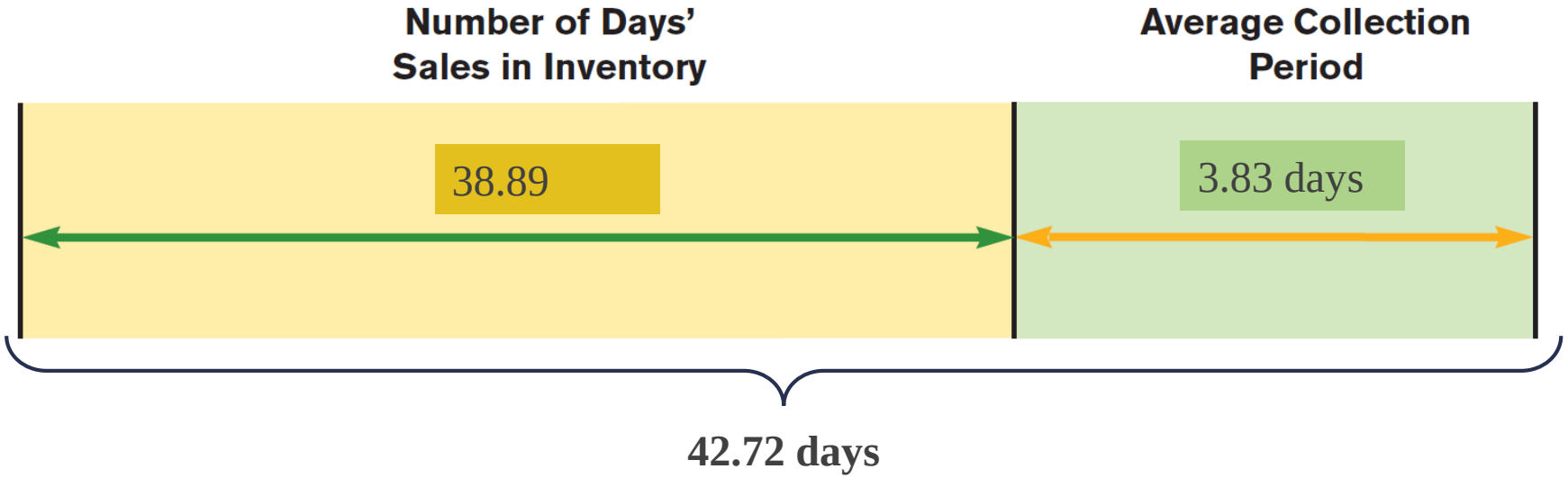
Sasa is on a 31 March fiscal year end. (i.e. FY2022 ends on 31st March 2022)

Operating Cycle of a Company

- Average Collection Period (from lecture 05) - how many days on average it takes the company to collect on its accounts receivables and convert it to cash.
- Number of Days' in Inventory - how many days on average it will take to convert inventory into cash/AR.

➔The two ratios together indicate a business's length of operating cycle – how much time it takes from the point inventory is purchased to cash collection from customer.

- Example: NTUC FairPrice's Operating Cycle in 2021 = 42.72 days (2020 = 40 days)



Assessing Efficiency and Liquidity
Number of Days Purchases in Accounts Payable

Number of Days' Purchases in AP

$$\text{Number of Day's Purchases in AP} = \frac{365}{\text{Purchases / Average Accounts Payable}}$$

- Measures how many days' worth of inventory does the company have in accounts payable
- Average length of time between purchase of inventory (on credit) and cash payment for that inventory.
- Useful to assess how fast a company is in paying its suppliers

Number of Days' Purchase in Accounts Payable
An example: NTUC FairPrice

IS

	Note	Group 2021 $'000	2020 $'000
Revenue	21	**4,252,342**	4,507,232
Inventories consumed		**(3,043,635)**	(3,244,277)

SFP

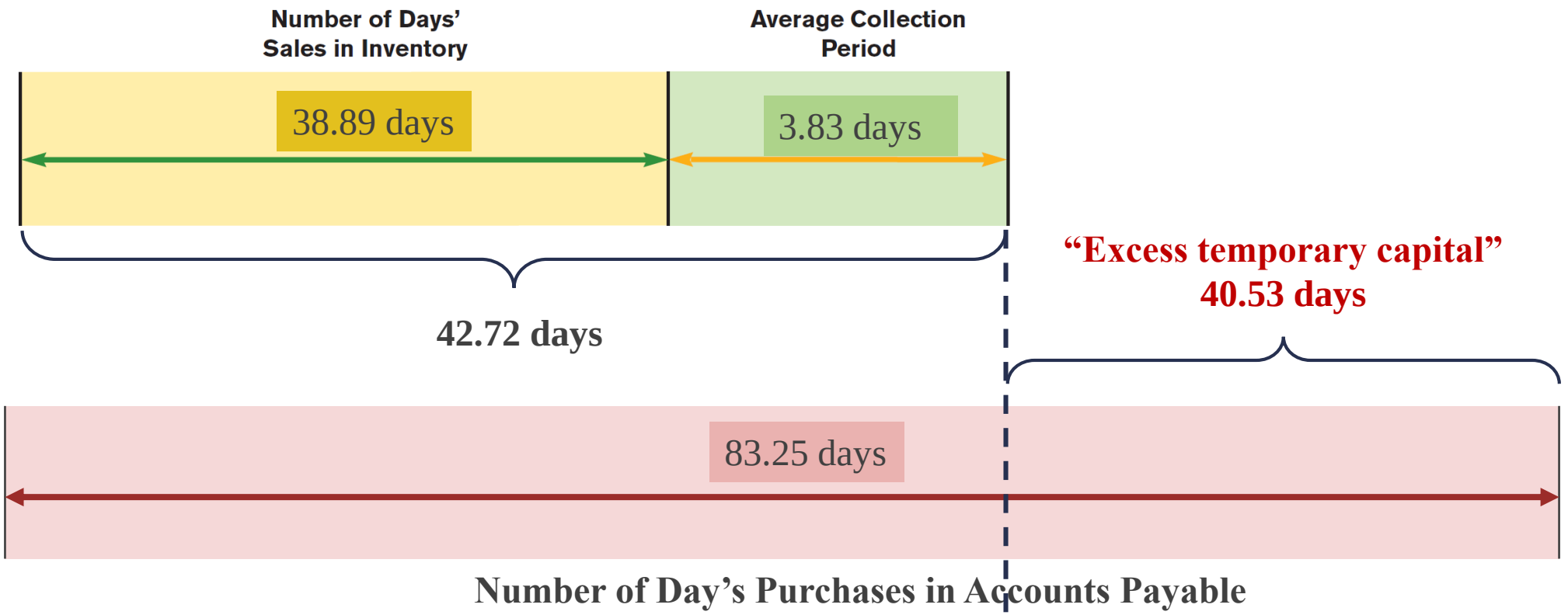
Current assets			
Trade and other receivables	11	**216,886**	280,431
Inventories	12	**291,264**	356,611
Cash and cash equivalents	13	**535,438**	618,869
Total current assets		**1,043,588**	1,255,911
Total assets		**6,046,848**	5,942,999

20 TRADE AND OTHER PAYABLES

	Group 2021 $'000	2020 $'000
Trade payables		
External parties	**668,478**	703,408
Amount due to ultimate holding entity	**3**	5
Amount due to subsidiaries	**–**	–
Amount due to associates	**2**	–
Amount due to related parties	**97**	72
	668,580	703,485

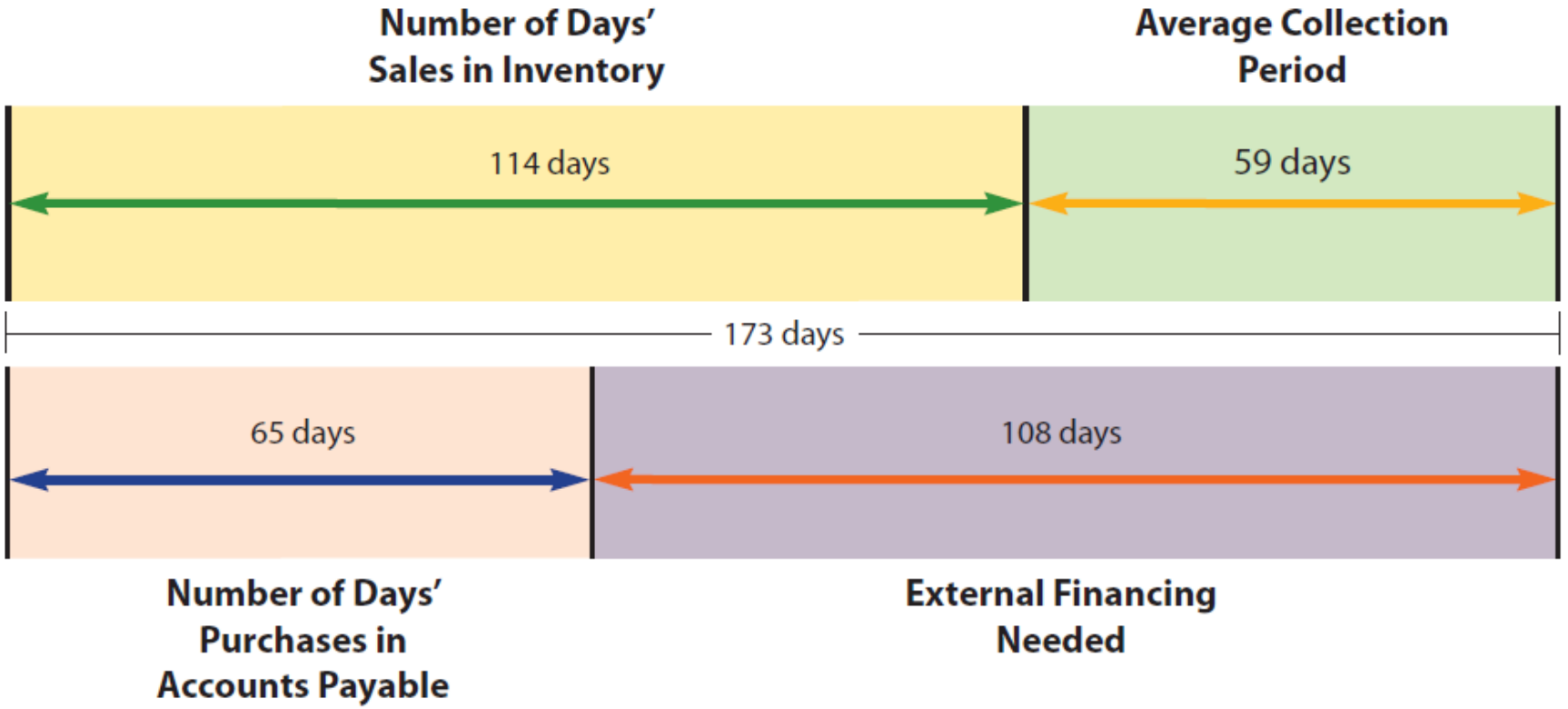
	2021	2020	2019
COGS	3,040,635	3,244,277	2,645,510
Increase in Inventory	(32,673)	57,878	19,189
Purchases (COGS + Inc in Inv)	3,007,962	3,302,125	2,665,699
Average AP	686,033	658,320	579,503
Number of Days' Purchases in AP	**83.25**	**72.77**	**79.29**

NTUC FairPrice: Net Operating Cycle in 2021



- It takes on average 42.72 days from the time NTUC FairPrice purchase its inventory to selling and receiving cash for it. However, NTUC takes 83.25 days to pay its suppliers!
- NTUC does not need to rely on external financing for cash to support its operating activities.

Example:
Caterpillar's Net operating cycle



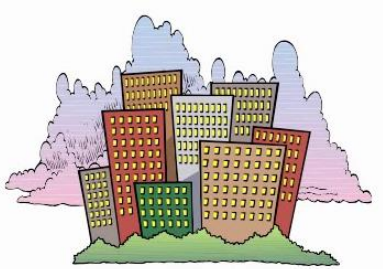
- Caterpillar must pay its suppliers in 65 days but must wait for 173 days before receiving the cash from its customers.
- Caterpillar must finance the remaining 108 days of its operating cycle through either equity or debt financing.

Take Away for Lecture 08

- Inventory for Merchandising Companies
  - Purchasing – discounts, returns & freight
  - Perpetual vs Periodic inventory system
- Inventory Costing
  - Inventory costing methods : specific identification, LIFO, FIFO, weighted average
  - Lower of cost and Net realizable value – recording inventory writedown
  - Effect of Inventory Errors on FS
- FSA
  - Inventory Turnover
  - Number of Days' Sales in Inventory
  - Number of Days' Purchases in Accounts Payable

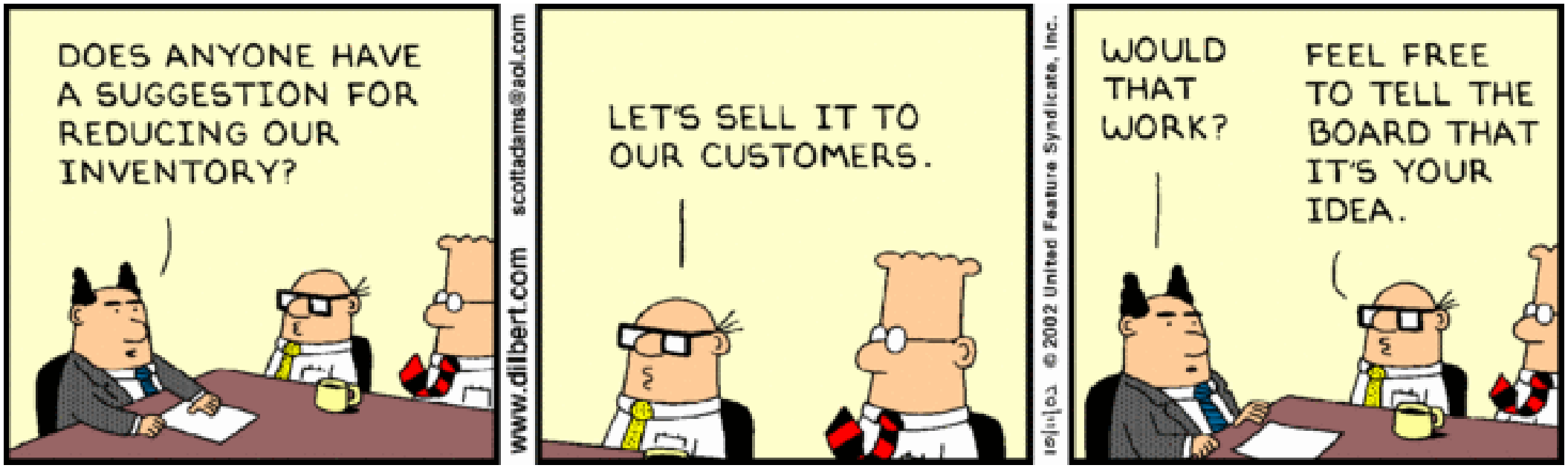
Coming Up Next Week…

- PPE (Property, Plant and Equipment) – Chapter 9
- What are long term operating assets? (LO1)
- How to record acquisition of PPE? (LO2)
- How to depreciate PPE? (LO3)
  - Straight-line depreciation
  - Units of production depreciation
  - Declining-balance depreciation
- How to account for changes in depreciation estimates? (LO4)
- How to capitalize certain expenses? (LO5) + *(Chapter 9 - LO4)*
- How to account for impairment and disposal of PPE? (LO6 & LO8)
- How to report PPE on FS? (LO7)



Note: We will <u>NOT</u> cover Exchanging PPE (LO11), Revaluation Model (LO12) and Assets Acquired by Leasing and/or construction (LO13) in this module.

See you next week!



Post your questions on Canvas discussion forum.

My email: hanny.kusnadi@nus.edu.sg