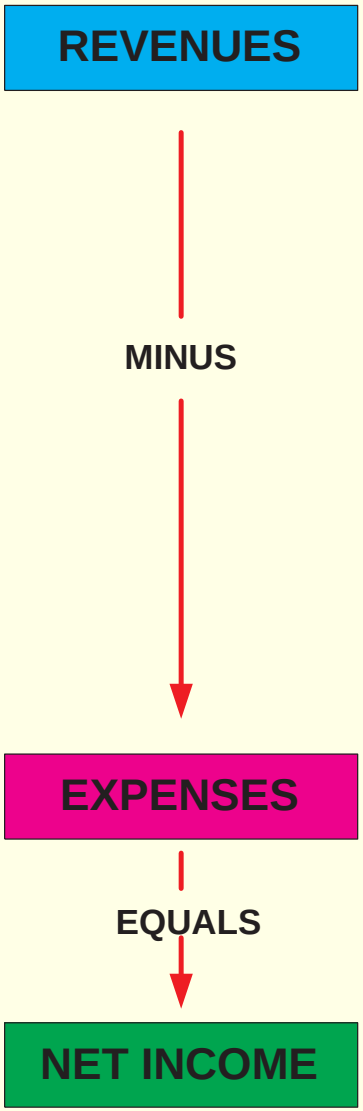
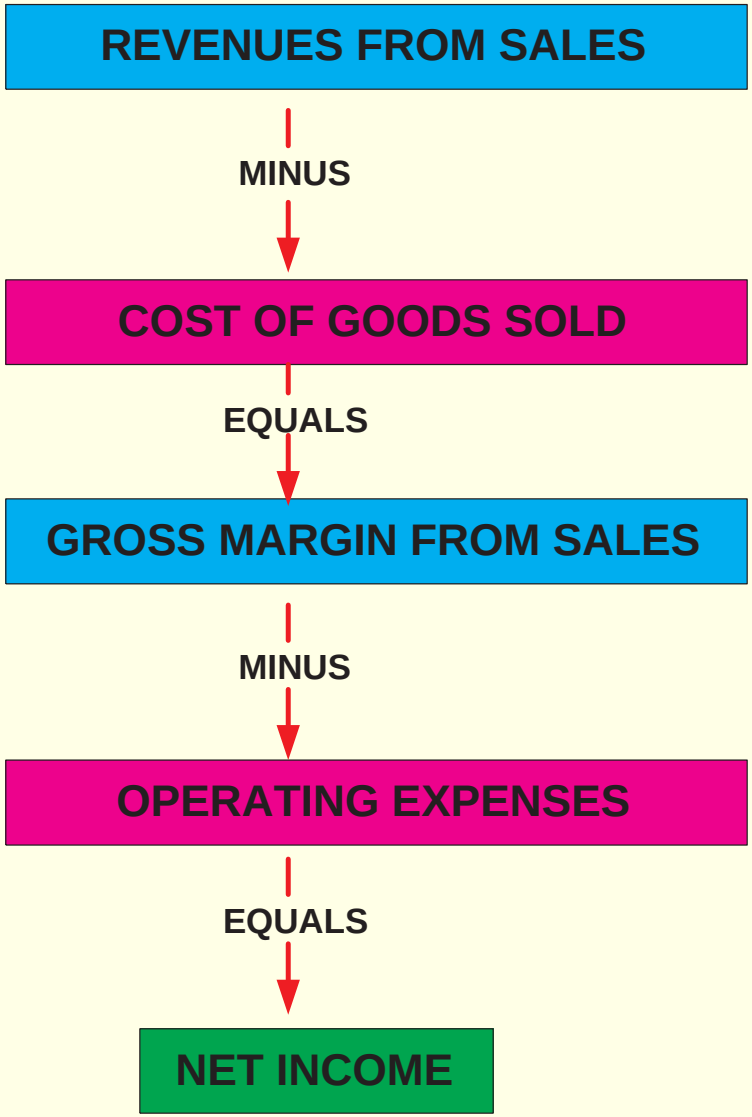
One of the primary objectives of accounting is measuring the net income of the businesses according to the generally accepted accounting principles.





The second part of the merchandising Income Statement is Cost of Goods Sold.

ACME Company, Partial Income Statement
For the month Ended September 30, 2008

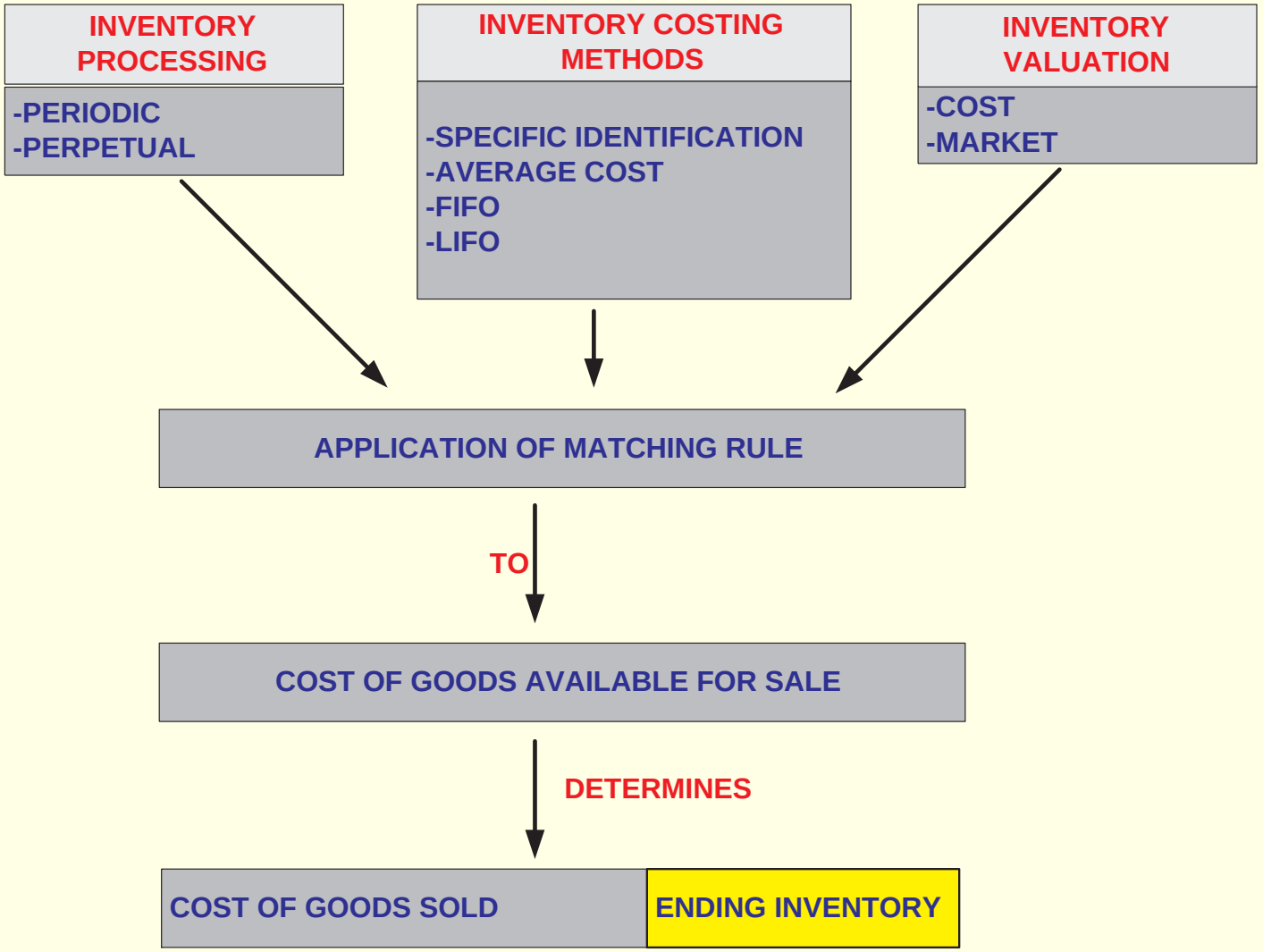
Cost of Goods Sold				
Merchandise Inventory, September 1			$52,800	
Purchases		$126,400		
Less:Purchases Returns & Allow.	$5,640			
Purchases Discounts	2,136	7,776		
		$118,624		
Freight In		8,236		
Net Purchases			126,860	
Goods Available for Sale			$179,600	
Less:Merchandise Inventory, September 30			48,300	
Cost Of Goods Sold				131,360

Merchandise inventory

- consists of all goods that are owned and held for sale to customers
- listed as an current asset (usually concerted into cash in a year)

Objective of the accounting for inventories

- the proper determination of income through the process of matching appropriate cost against revenues
- is to determine the best measure of income
- not the most realistic inventory value.
- Realistic inventory and best income determination can conflict
  - income determination has precedence


INVENTORY PROCESSING
-PERIODIC
-PERPETUAL
INVENTORY COSTING METHODS
-SPECIFIC IDENTIFICATION
-AVERAGE COST
-FIFO
-LIFO
INVENTORY VALUATION
-COST
-MARKET
APPLICATION OF MATCHING RULE
TO
COST OF GOODS AVAILABLE FOR SALE
DETERMINES
COST OF GOODS SOLD
ENDING INVENTORY

- Cost of goods sold (CGS) = Beginning Inv. + Net Purchases - Ending Inv.
- Net Income = Net Sales - CGS - Operating Expenses
- The way we calculate the cost of the ending inventory affects both the CGS and the Net Income.

The basic problem is to separate

Goods Available for Sale (Beginning Inv + Net Purchases) into:

1. goods sold (CGS)
2. goods not sold (Ending Inventory)

Therefore determining the Ending Inventory correct is important to calculate the Net Income correctly.

Let's see the effect of ending inventory on net income on the following examples. If the ending inventory is determined correctly as $10,000:

Example 1. Ending Inventory $10,000 (Correct)

Cost of Goods Sold		**Income Statement**	
Beginning Inventory	$12,000	Net Sales	$100,000
Net Purchases	58,000	CGS	60,000
Goods Available for Sale	$70,000	Gross Margin	$40,000
Ending Inventory	10,000	Operating Expenses	32,000
CGS	$60,000	Net Income	$8000

If the ending inventory is overstated by $6,000:

Example 2. Ending Inventory $16,000 (Overstated)

Cost of Goods Sold		Income Statement	
Beginning Inventory	$12,000	Net Sales	$100,000
Net Purchases	58,000	CGS	54,000
Goods Available for Sale	$70,000	Gross Margin	$46,000
Ending Inventory	16,000	Operating Expenses	32,000
CGS	$54,000	Net Income	$14,000

If the ending inventory is understated by $6,000:

Example 3. Ending Inventory $16,000 (Understated)

Cost of Goods Sold		Income Statement	
Beginning Inventory	$12,000	Net Sales	$100,000
Net Purchases	58,000	CGS	66,000
Goods Available for Sale	$70,000	Gross Margin	$34,000
Ending Inventory	4,000	Operating Expenses	32,000
CGS	$66,000	Net Income	$2,000

In all of the three examples, the cost of goods available for sale was $70,000. The difference is resulted from how this $70,000 was divided between the ending inventory and cost of goods sold.

- Pricing of inventory is one of the most widely debated problems in accounting
- Prices of most of the merchandise vary during the year
- Identical lots of merchandise may have been purchased at different prices
- When these items are sold, it is impossible to tell which have been sold and which are still in inventory
- It is necessary to make an assumption about the order in which the items have been sold
- the assumed order of sale may or may not be the same as the actual order of sale
- the assumption is really an assumption about the flow of costs rather than the flow of physical inventory.

There are a number of acceptable methods of valuing inventories, each based on different assumption of cost flow;

Methods of Pricing Inventory

1. Specific Identification Method
2. Average-Cost Method
3. First-In First-Out (FIFO) Method
4. Last-In First-Out (LIFO) Method

The choice depends on:

- the nature of the business,
- financial effects of the methods,
- the costs to implement them.

To illustrate the four methods, we will use the following data for the month of June:

Inventory Data, June 30			
June 1	Inventory	50 units@$1.00	$50
June 6	Purchased	50 units@$1.10	$55
June 13	Purchased	150 units@$1.20	$180
June 20	Purchased	100 units@$1.30	$130
June 25	Purchased	150 units@$1.40	$210
Goods Available for Sale		500 units	$625
Sales		280 units	
On hand June 30		220 units	

There is a total of 500 units available for sale at a total cost of $625. Problem is dividing $625 between the 280 units sold and 220 units on hand.

1-Specific Identification Method

The units in ending inventory is identified as coming from specific purchases

Assuming the June 30 inventory consists of 50 units from June 1 inventory, 100 units from June 13 and 70 from the June 25 purchase:

Inventory Data, June 30			
50 units@$1.00	$50	Goods Available for Sale	$625
100 units@$1.20	$120	Less June 30 Inventory	268
70 units@$1.40	$98	CGS	$357
220 units	$268		

This method is mostly used in the purchase and sale of high-priced articles, such as automobiles. Its disadvantage is that a company can arbitrarily decide to sell high- or low-cost items.

2-Average-Cost Method

- Assumes that the cost of inventory is based on the average cost of goods available for sale during the period
- Average cost $= \frac{\textbf{cost of goods available for sale}}{\textbf{total units available for sale}}$
- Resulting weighted-average unit cost is applied to the units in the ending inventory.

Average unit cost: $625/500 = \$1.25$
Ending Inventory: 220 units @ $\$1.25 = \$275$
CGS $= \$625 - \$275 = \$350$
Advantage: Average-cost method tends to level out the effects of cost increases and decreases during the period.
Disadvantage: Average-cost method fails to give more importance to the recent costs, which is believed to be more relevant in income measurement.

3-First-In First-Out (FIFO) Method

Based on the assumption that the costs of the first items acquired should be assigned to the first items sold. Ending inventory is composed of the most recent purchases.

Inventory Data, June 30	
150 units@ \$1.40	\$210
70 units@ \$1.30	\$91
220 units	\$301

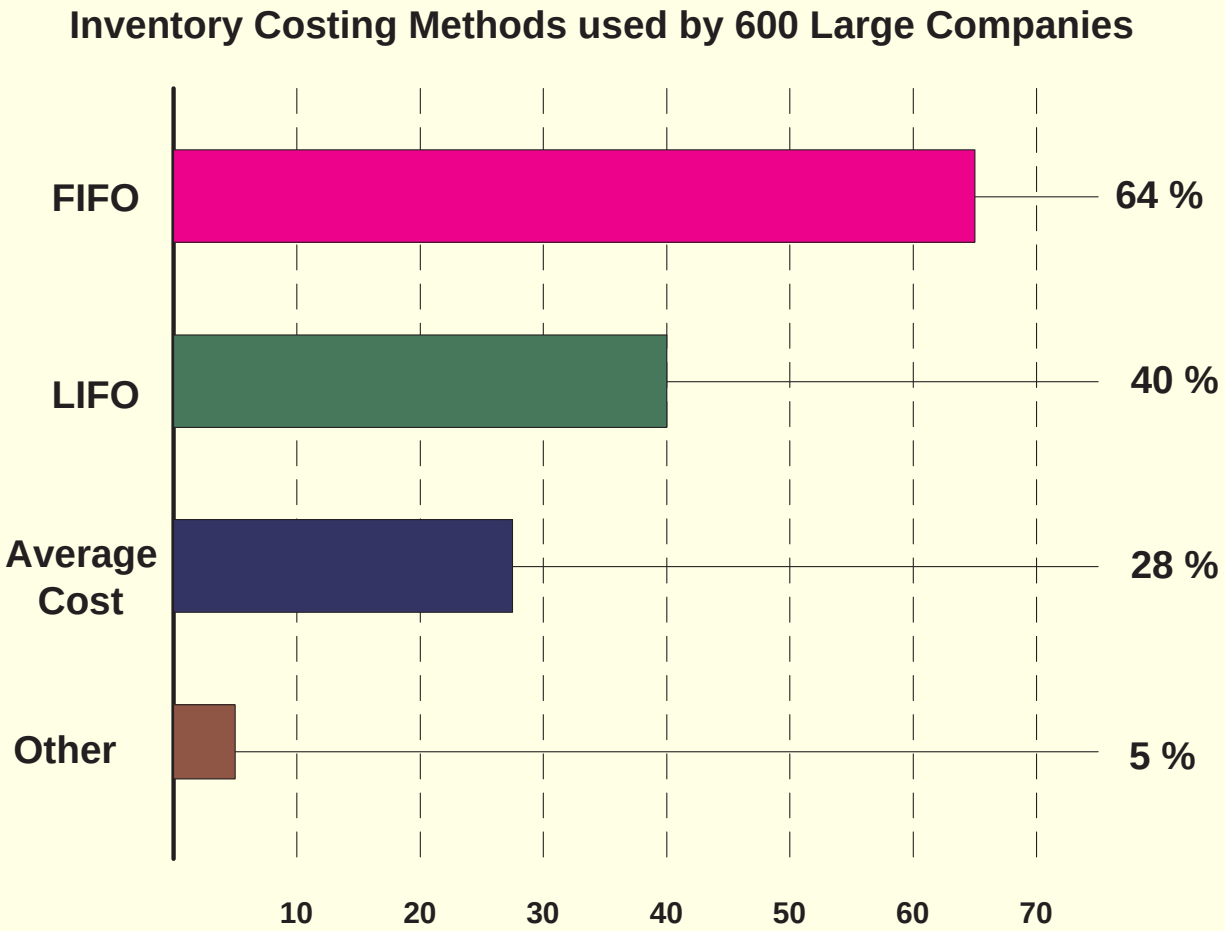
Therefore, CGS $=$ \$625 $-$ \$301 $=$ \$324.
The effect of FIFO is valuing the ending inventory at the most recent costs and include the earlier ones in the cost of goods sold. Therefore during inflationary periods (prices rising), FIFO yields highest possible net income.

4-Last-In First-Out (LIFO) Method

Based on the assumption that the costs of the last items purchased should be assigned to the first items sold. Ending inventory is composed of the earliest purchases.

Inventory Data, June 30	
50 units@ \$1	\$50
50 units@ \$1.1	\$55
120 units @ \$1.2	\$144
220 units	\$249

Therefore, CGS $=$ \$625 $-$ \$249 $=$ \$376.
The effect of LIFO is to value inventory at earliest prices and include in the cost of goods sold the cost of most recent purchased goods.


Inventory Costing Methods used by 600 Large Companies
FIFO
64 %
LIFO
40 %
Average Cost
28 %
Other
5 %
10
20
30
40
50
60
70

On March 1, the Axe Company had 1,600 units in inventory at $10/unit. The following transactions are recorded during the month:

March 5 : Buy 800 @ $11/units
March 20 : Buy 500 @ $13/units
March 31 : Buy 1,400 @ $12/units

The physical inventory at hand on March 31 is 1,800 units. Find the cost of goods sold and the value of the ending inventory using the methods:

a) FIFO

b) LIFO

c) Average-cost

a) FIFO METHOD

Ending Inventory Data, March 31	
1,400 units@ $12	$16,800
400 units@ $13	$5,200
1,800 units	$22,000

Cost of goods available for sale =
$1,600 \times 10 + 800 \times 11 + 500 \times 13 + 1,400 \times 12$ = $\$48,100$.

Therefore, CGS $= \$48,100 - \$22,000 = \$26,100$.

b) LIFO METHOD

Ending Inventory Data, March 31	
1,600 units@ $10	$16,000
200 units@ $11	$2,200
1,800 units	$18,200

Therefore, CGS $= \$48,100 - \$18,200 = \$29,900.$

c) Average-Cost METHOD

Inventory Purchase

March 1	$1600 * 10 =$	\$16,000
March 5	$800 * 11 =$	\$8,800
March 20	$500 * 13 =$	\$6,500
March 31	$1400 * 12 =$	\$16,800

Average cost per unit = 48,100/4300= \$11,186

Number of units sold =2,500

Cost of Goods sold = 2,500 * 11,186 = \$27,965

Ending Inventory Value = \$20,135

Long Term Assets

- have a useful life of more than one year
- are required for use in the operation of the business
- are not intended for resale to customers
- If an item is held for resale, it should be classified as inventory, no matter how durable it is

Life of Long Term Assets

Each long term asset is a type of long-term prepaid expense. The problem is to spread the cost of services obtained from the long term assets over the useful life of it.
As the services benefit the company over years, the cost becomes an expense rather than an asset.

Long term assets are customarily divided into the following categories:

Asset	Expense
Tangible Assets	
Land	None
Plant, buildings, equipment	Depreciation
Intangible Assets	Amortization

Tangible Assets

- have physical substance
- other than land, they are subject to depreciation
- Depreciation is the periodic allocation of the cost of tangible long-lived assets over their useful lives.

Intangible Assets

- Long-term assets that do not have physical substance
- Patents, trademarks, copyrights
- The allocation of cost of the intangible assets to the periods they

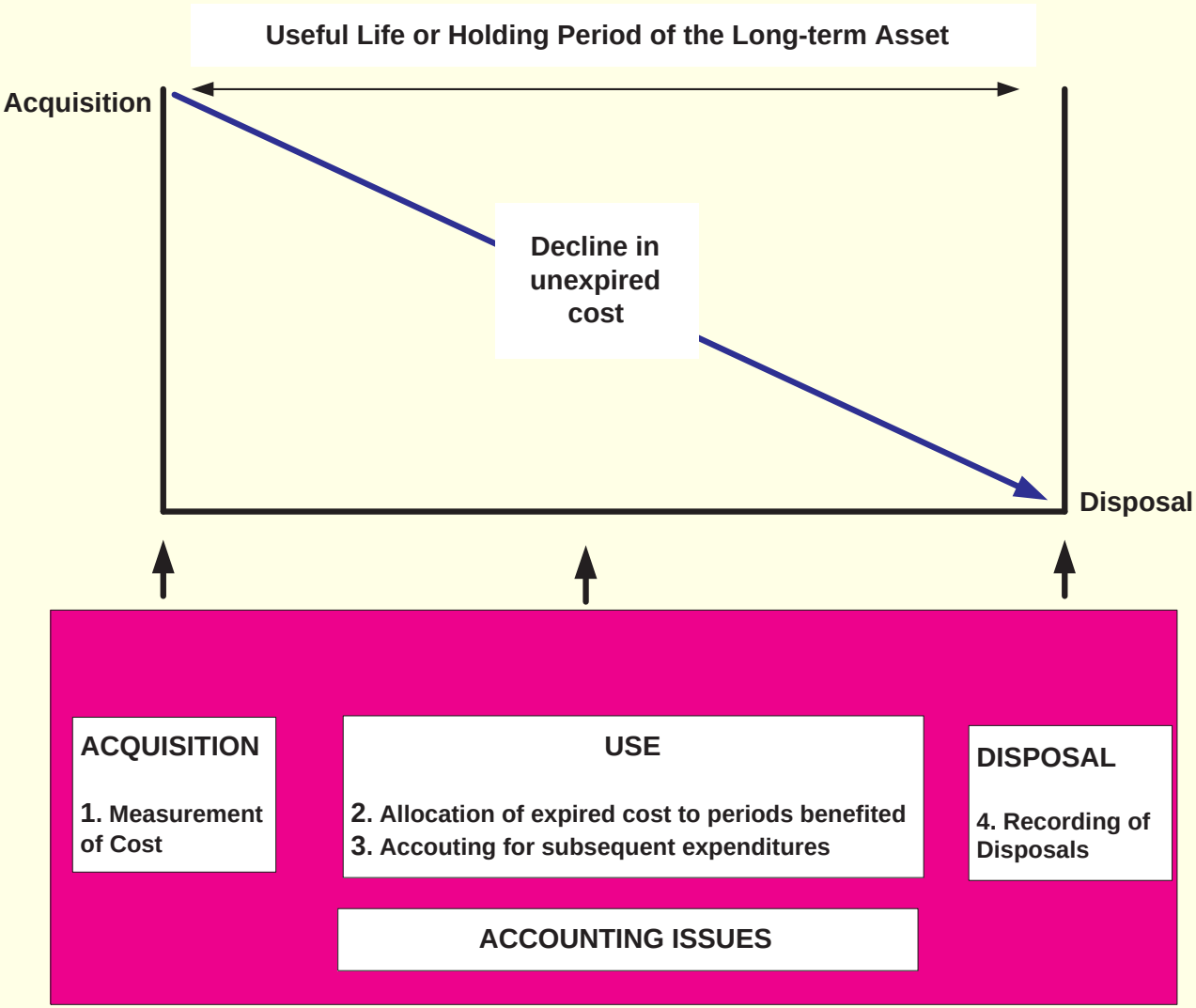
As with prepaid expenses, there are two important problems when dealing with long term assets:

1. Determining how much of the total cost should be allocated to expense in current accounting period
2. Figuring how much should remain on balance sheet as an asset to benefit the future periods

Accounting for Depreciation

Depreciation accounting aims to distribute the cost or other basic value of tangible assets, less salvage (if any), over the estimated useful life of the asset in a systematic and rational manner. It is a process of allocation not valuation.

1. does not refer to the physical deterioration of an asset or the decrease in the market value over time
2. the allocation of the cost of the long-lived asset to the periods that benefit from services of the asset
3. the gradual conversion of the cost of the asset into expense


Useful Life or Holding Period of the Long-term Asset
Acquisition
Decline in unexpired cost
Disposal
ACQUISITION
1. Measurement of Cost
USE
2. Allocation of expired cost to periods benefited
3. Accouting for subsequent expenditures
DISPOSAL
4. Recording of Disposals
ACCOUNTING ISSUES

Factors that affect the computation of Depreciation are:

1. Cost. Net purchase price plus reasonable expenditures to get asset ready for use.
2. Residual Value. Its estimated net scrap,salvage or trade-in value as of the estimated date of disposal. (Salvage or disposal value)
3. Depreciable Cost$=$ Cost $-$ Residual Value.
   Depreciable cost must be allocated over the estimated useful life.
4. Estimated Useful Life. Total number of service units expected from the asset. In computing the estimated useful life of an asset, accountants consider:
   1. Past experience with similar assets
   2. Asset's present condition
   3. Company's repair and maintenance policy
   4. Current technological and industry trends
   5. Local conditions such as weather

1-Straight-Line Method

- Depreciable cost of the asset is spread evenly over the estimated useful life
- Based on the assumption that depreciation only depends on the passage of time
- Depreciation Expense = $\frac{\textbf{Depreciable Cost (Cost-Residual Value)}}{\textbf{Estimated Useful life}}$

Example

Suppose that a delivery truck costs \$10,000 and has an estimated residual value of \$1,000 at the end of its estimated useful life of five years. Therefore, annual depreciation is:

$$\frac{\textbf{Depreciable Cost (Cost-Residual value)}}{\textbf{Estimated Useful life}} = \frac{\$10,000 - \$1,000}{5} = \$1,800.$$

The depreciation for five years would be:

Depreciation Schedule, Straight-Line Method

	Cost	Yearly Depreciation	Accumulated Depreciation	Carrying Value
Date of Purchase	$10,000	–	–	$10,000
End of Year 1	10,000	$1,800	$1,800	8,200
End of Year 2	10,000	1,800	3,600	6,400
End of Year 3	10,000	1,800	5,400	4,600
End of Year 4	10,000	1,800	7,200	2,800
End of Year 5	10,000	1,800	9,000	1,000

Same amount of depreciation cost each year.

2-Sum-of-the-Years'-Digits Method

- Is an accelerated method of depreciation in which the years in the service life of an asset are added
- Their sum becomes denominator of a series of fractions that are applied against the depreciable cost
- Numerators of the fractions are the individual years in reverse order.

Example

For delivery truck, the denominator: $1 + 2 + 3 + 4 + 5 = 15$. The fractions for each year starting from year 1 are: $\frac{5}{15}$, $\frac{4}{15}$, $\frac{3}{15}$, $\frac{2}{15}$, and $\frac{1}{15}$.

The depreciation schedule is:

Depreciation Schedule, Sum-of-the-Years'-Digits Method

	Cost	Yearly Depre.	Accum. Depre.	Carrying Value
Date of Buy	\$10,000	–	–	\$10,000
End of Year 1	10,000	$(5/15 * 9000)$ \$3,000	\$3,000	7,000
End of Year 2	10,000	$(4/15 * 9000)$ 2,400	5,400	4,600
End of Year 3	10,000	$(3/15 * 9000)$ 1,800	7,200	2,800
End of Year 4	10,000	$(2/15 * 9000)$ 1,200	8,400	1,600
End of Year 5	10,000	$(1/15 * 9000)$ 600	9,000	1,000

From the schedule, note that yearly depreciation is greatest in the first year and declines each year after that.

3-Declining-Balance Method

- Computed by applying a fixed rate to the carrying value.
- The most common rate is the twice the straight-line percentage
- When twice the straight line percentage is used, the method is called the Double-Declining-Balance method.

Example

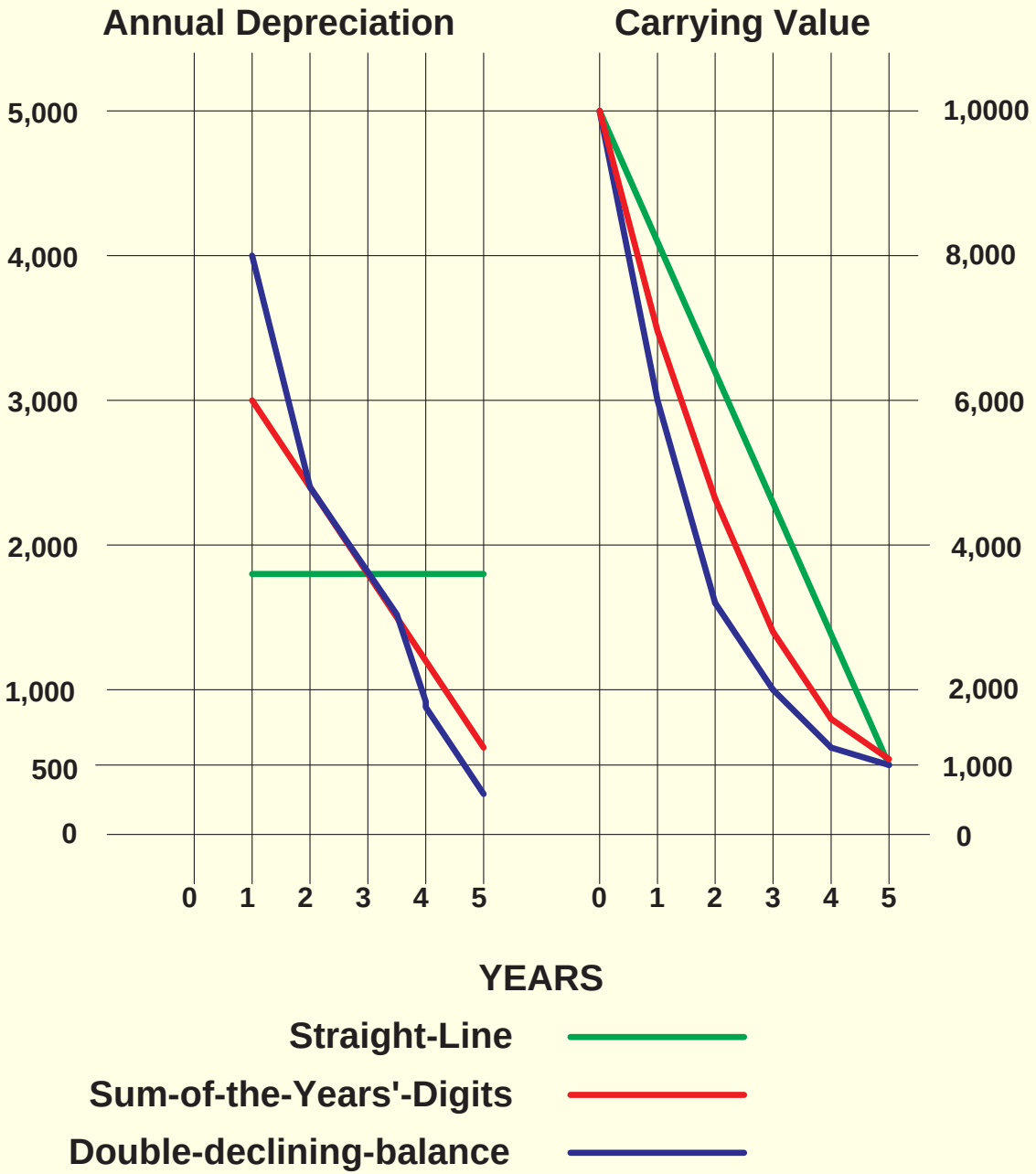
In the truck example, for the straight line method, the percentage was 20 percent (100/5). Therefore, under the double-declining-balance method the percentage utilized will be 40%. The fixed rate of 40% will be applied to the carrying value at the end of each year to find the yearly depreciation.

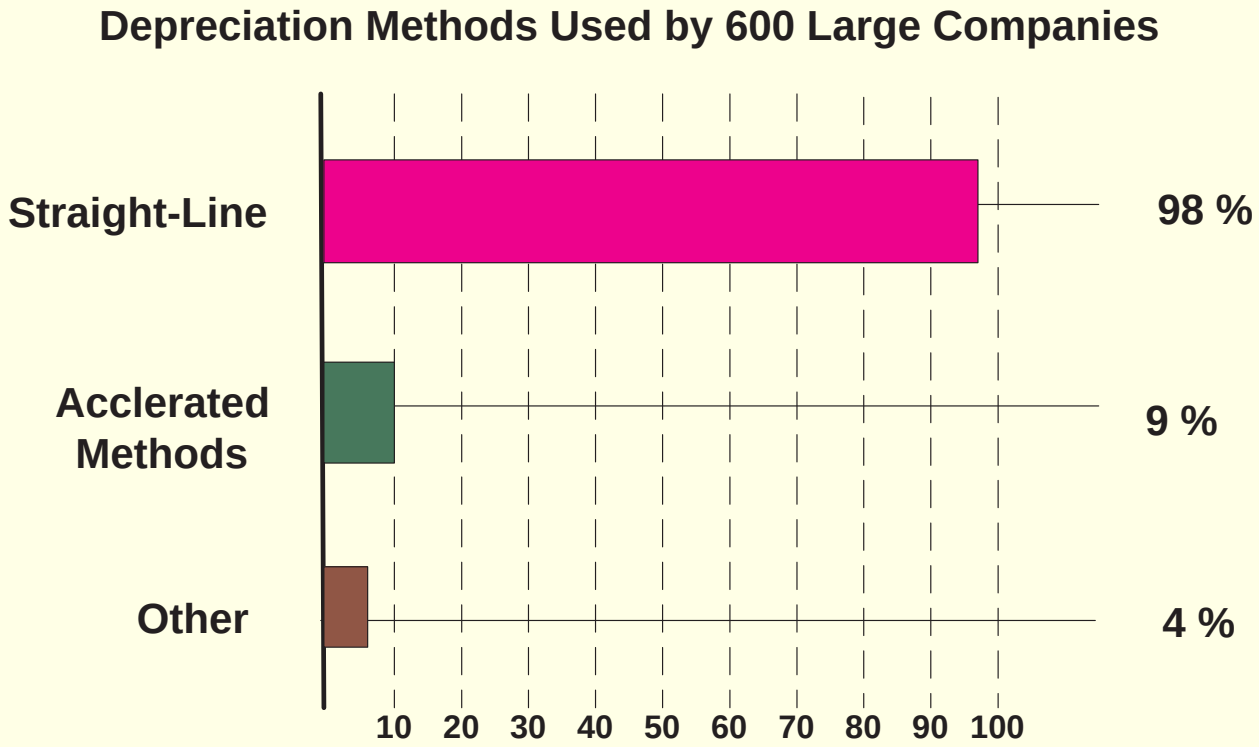
The depreciation schedule is:

Depreciation Schedule, Double-Declining-Balance Method

	Cost	Yearly Depre.	Accum. Depre.	Carrying Value
Date of Purchase	$10,000	–	–	$10,000
End of Year 1	10,000	$(0.4 * 10,000)$ $4,000	$4,000	6,000
End of Year 2	10,000	$(0.4 * 6,000)$ 2,400	6,400	3,600
End of Year 3	10,000	$(0.4 * 3,600)$ 1,440	7,840	2,160
End of Year 4	10,000	$(0.4 * 2,160)$ 864	8,704	1,296
End of Year 5	10,000	296	9,000	1,000

- Fixed rate always applied to the carrying value at the end of the previous year.
- Depreciation is greatest in the first year and declines each year afterwards
- Depreciation in the last year is limited to the amount necessary to reduce carrying value to the residual value


Annual Depreciation
Carrying Value
5,000
4,000
3,000
2,000
1,000
500
0
1,0000
8,000
6,000
4,000
2,000
1,000
0
0 1 2 3 4 5
0 1 2 3 4 5
YEARS
Straight-Line
Sum-of-the-Years'-Digits
Double-declining-balance


Depreciation Methods Used by 600 Large Companies
Straight-Line
98 %
Acclerated Methods
9 %
Other
4 %
10
20
30
40
50
60
70
80
90
100

An asset costing $100,000 has a 20% salvage value and has a depreciable useful life of 5 years. Find the depreciation expense each year of its actual life of 10 years under the following methods:

a) Straight-line method

b) Double declining balance

c) Sum of the years' digit

a) Straight Line Method

$$\textbf{Annual depreciation expense} = \frac{\textbf{Purchase Value - Salvage Value}}{\textbf{Useful Life}}$$

$$= \frac{100,000 - 20,000}{5} = \$16,000$$

Year	Accumulated depreciation	
1	16,000	
2	32,000	
3	48,000	
4	64,000	
5	80,000	$\rightarrow$ Useful Life
6	80,000	
7	80,000	
8	80,000	
9	80,000	
10	80,000	$\rightarrow$ Actual Life

b) Double Declining Balance Method

Depreciation rate $= \frac{2}{n}$ (since double declining)

Depreciation rate $= \frac{2}{5} = 0.4$

Year	Beg. Book Value	Rate	Dep.Expense	End Book value
1	100,000	0.4	40,000	60,000
2	60,000	0.4	24,000	36,000
3	36,000	0.4	14,400	21,600
4	21,600	0.4	1600	20,000
5	20,000	0.4	0	20,000

c) Sum of the Years' Digit

$\text{SYD} = 1 + 2 + 3 + 4 + 5 = 15$

$$\frac{\textbf{(Purchase Value - Salvage Value)(Remaining Useful Life)}}{\textbf{SYD}}$$

Year	Depreciable Cost	Rate	Dep.Expense	Book value
1	80,000	5/15	26,667	73,333
2	80,000	4/15	21,333	52,000
3	80,000	3/15	16,000	36,000
4	80,000	2/15	10,667	25,333
5	80,000	1/15	5,333	20,000

Disposal of Depreciable Assets

When depreciable assets are no longer useful, a company can dispose of them by:

- Discarding
- Selling for cash
- Trading in on the purchase of for a new asset

Regardless of the disposal method, depreciation expense for the partial year up to the date of disposal must be recorded.

Example

MGC Company purchased a machine on January 2, 2000 for $\$10,000$ with an estimated useful life of 9 years, and an estimated residual value of $\$1,000$. Straight line depreciation is used. On December 31, 2007, the company's records indicated an accumulated depreciation of $\$8,000$. On January 2, 2008 management disposed of the machine.

Disposal of Depreciable Assets: Discarding

- At the time of the disposal, the machine has a carrying value of $\$10,000 - \$8,000 = \$2,000$.
- A loss equal to the carrying value should be recorded when the machine is discarded.

Date		Description	Post Ref.	Debit	Credit
2008 Jan	*2*	*Accumulated Depreciation-Machinery*		*8,000*	
		Loss on Disposal of Machinery		*2,000*	
		Machinery			*10,000*
		Discarded machine, no longer used in business			

- Gains and losses on disposals of plant assets are classified as other revenues and expenses on income statement.

Disposal of Depreciable Assets: Selling for Cash

- The machine is sold for $2,000

Date		Description	Post Ref.	Debit	Credit
2008 Jan	*2*	*Cash*		*2,000*	
		Accumulated Depreciation-Machinery		*8,000*	
		Machinery			*10,000*
		Sale of machine,			
		No gain or loss			

- The machine is sold for $1,000.

Date		Description	Post Ref.	Debit	Credit
2008 Jan	*2*	*Cash*		*1,000*	
		Accumulated Depreciation-Machinery		*8,000*	
		Loss on Sale of Machinery		*1,000*	
		Machinery			*10,000*
		Sale of machine, loss of			
		$1,000 recorded			

Disposal of Depreciable Assets: Selling for Cash

- The machine is sold for $3,000

Date		Description	Post Ref.	Debit	Credit
2008 Jan	*2*	*Cash*		*3,000*	
		Accumulated Depreciation-Machinery		*8,000*	
		Gain on Sale of Machinery			*1,000*
		Machinery			*10,000*
		Sale of machine, gain of $1,000 recorded			