Current Assets: Part II

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Part 1
Accounts Receivable

Your goals for this "Accounts Receivable" chapter are to learn about:

- The costs and benefits of selling on credit.
- Accounting considerations for uncollectible receivables.
- Alternative approaches to account for uncollectibles.
- Notes receivable and interest, including dishonored obligations.

1. The Costs and Benefits of Selling on Credit

You already know that receivables arise from a variety of claims against customers and others, and are generally classified as current or noncurrent based on expectations about the amount of time it will take to collect them. The majority of receivables are classified as trade receivables, which arise from the sale of products or services to customers. Such trade receivables are carried in the Accounts Receivable account. Nontrade receivables arise from other transactions and events, including advances to employees and utility company deposits.

1.1 Credit Sales

To one degree or another, many business transactions result in the extension of credit. Purchases of inventory and supplies will often be made on account. Likewise, sales to customers may directly (by the vendor offering credit) or indirectly (through a bank or credit card company) entail the extension of credit. While the availability of credit facilitates many business transactions, it is also costly. Credit providers must conduct investigations of credit worthiness, and monitor collection activities. In addition, the creditor must forego alternative uses of money while credit is extended. Occasionally, a creditor will get burned when the borrower refuses or is unable to pay. Depending on the nature of the credit relationship, some credit costs may be offset by interest charges. And, merchants frequently note that the availability of credit entices customers to make a purchase decision.

1.2 Credit Cards

Banks and financial services companies have developed credit cards that are widely accepted by many merchants, and eliminate the necessity of those merchants maintaining separate credit departments. Popular examples include MasterCard, Visa, and American Express. These credit card companies earn money off of these cards by charging merchant fees (usually a formula-based percentage of sales) and assess interest and other charges against the users. Nevertheless, merchants tend to welcome their use because collection is virtually assured and very timely (oftentimes same day funding of the transaction is made by the credit card company). In addition, the added transaction cost is offset by a reduction in the internal costs associated with maintaining a credit department.

The accounting for credit card sales depends on the nature of the card. Some bank-card based transactions are essentially regarded as cash sales since funding is immediate. Assume that Bassam Abu Rayyan Company sold merchandise to a customer for $1,000. The customer paid with a bank card, and the bank charged a 2% fee. Bassam Abu Rayyan Company should record the following entry:

1-9-X3	Cash	980	
	Service Charge	20	
	Sales		1,000
	Sold merchandise on "bank card;" same day funding, net of fee of 2% assessed by bank		

Other card sales may involve delayed collection, and are initially recorded as credit sales:

1-9-X3	Accounts Receivable	1,000	
	Sales		1,000
	Sold merchandise on "nonbank card"		
1-25-X3	Cash	980	
	Service Charge	20	
	Accounts Receivable		1,000
	Collected amount due from credit card company; net of fee of 2%		

Notice that the entry to record the collection included a provision for the service charge. The estimated service charge could (or perhaps should) have been recorded at the time of the sale, but the exact amount might not have been known. Rather than recording an estimate, and adjusting it later, this illustration is based on the simpler approach of not recording the charge until collection occurs. This expedient approach is acceptable because the amounts involved are not very significant.

2. Accounting for Uncollectible Receivables

Unfortunately, some sales on account may not be collected. Customers go broke, become unhappy and refuse to pay, or may generally lack the ethics to complete their half of the bargain. Of course, a company does have legal recourse to try to collect such accounts, but those often fail. As a result, it becomes necessary to establish an accounting process for measuring and reporting these uncollectible items. Uncollectible accounts are frequently called "bad debts."

2.1 Direct Write-off Method

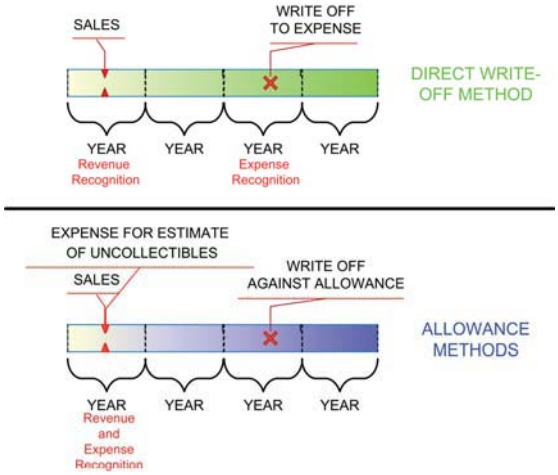
A simple method to account for uncollectible accounts is the direct write-off approach. Under this technique, a specific account receivable is removed from the accounting records at the time it is finally determined to be uncollectible. The appropriate entry for the direct write-off approach is as follows:

2-10-X7	Uncollectible Accounts Expense		500	
	Accounts Receivable			500
	To record the write off of an uncollectible account from Jones			

Notice that the preceding entry reduces the receivables balance for the item that is uncollectible. The offsetting debit is to an expense account: Uncollectible Accounts Expense.

While the direct write-off method is simple, it is only acceptable in those cases where bad debts are immaterial in amount. In accounting, an item is deemed material if it is large enough to affect the judgment of an informed financial statement user. Accounting expediency sometimes permits "incorrect approaches" when the effect is not material. Recall the discussion of nonbank credit card charges above; there, the service charge expense was recorded subsequent to the sale, and it was suggested that the approach was lacking but acceptable given the small amounts involved. Again, materiality considerations permitted a departure from the best approach. But, what is material? It is a matter of judgment, relating only to the conclusion that the choice among alternatives really has very little bearing on the reported outcomes.

You must now consider why the direct write-off method is not to be used in those cases where bad debts are material; what is "wrong" with the method? One important accounting principle is the notion of matching. That is, costs related to the production of revenue are reported during the same time period as the related revenue (i.e., "matched"). With the direct write-off method, you can well understand that many accounting periods may come and go before an account is finally determined to be uncollectible and written off. As a result, revenues from credit sales are recognized in one period, but the costs of uncollectible accounts related to those sales are not recognized until another subsequent period (producing an unacceptable mismatch of revenues and expenses).



To compensate for this problem, accountants have developed "allowance methods" to account for uncollectible accounts. Importantly, an allowance method must be used except in those cases where bad debts are not material (and for tax purposes where tax rules often stipulate that a direct write-off approach is to be used). Allowance methods will result in the recording of an estimated bad debts expense in the same period as the related credit sales. As you will soon see, the actual write off in a subsequent period will generally not impact income.

3. Alternative Approaches for Uncollectibles

Having established that an allowance method for uncollectibles is preferable (indeed, required in many cases), it is time to focus on the details. Let's begin with a consideration of the balance sheet. Suppose that Ito Company has total accounts receivable of $425,000 at the end of the year, and is in the process or preparing a balance sheet. Obviously, the $425,000 would be reported as a current asset. But, what if it is estimated that $25,500 of this amount may ultimately prove to be uncollectible? Thus, a more correct balance sheet presentation would appear as shown at right.

ITO COMPANY **Balance Sheet** **December 31, 20X3**		
Assets		
. . .		
Accounts receivable	$425,000	
Less: Allowance for uncollectibles	(25,500)	$399,500
. . .		

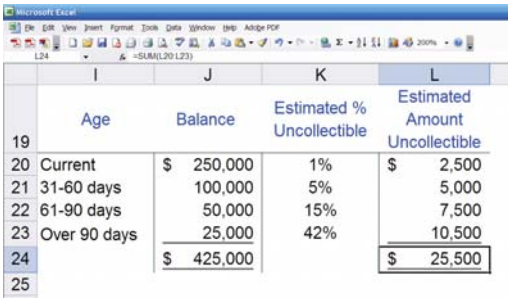
The total receivables are reported, along with an allowance account (which is a contra asset account) that reduces the receivables to the amount expected to be collected. This anticipated amount to be collected is often termed the "net realizable value."

3.1 Determining the Allowance Account

In the preceding illustration, the $25,500 was simply given as part of the fact situation. But, how would such an amount actually be determined? If Ito Company's management knew which accounts were likely to not be collectible, they would have avoided selling to those customers in the first place. Instead, the $25,500 simply relates to the balance as a whole. It is likely based on past experience, but it is only an estimate. It could have been determined by one of the following techniques:

- AS A PERCENTAGE OF TOTAL RECEIVABLES: Some companies anticipate that a certain percentage of outstanding receivables will prove uncollectible. In Ito's case maybe 6% ($425,000 X 6% = $25,500).

- VIA AN AGING ANALYSIS: Other companies employ more sophisticated aging of accounts receivable analysis. They will stratify the receivables according to how long they have been outstanding (i.e., perform an aging), and apply alternative percentages to the different strata. Obviously, the older the account, the more likely it is to represent a bad account. Ito's aging may have appeared as follows:

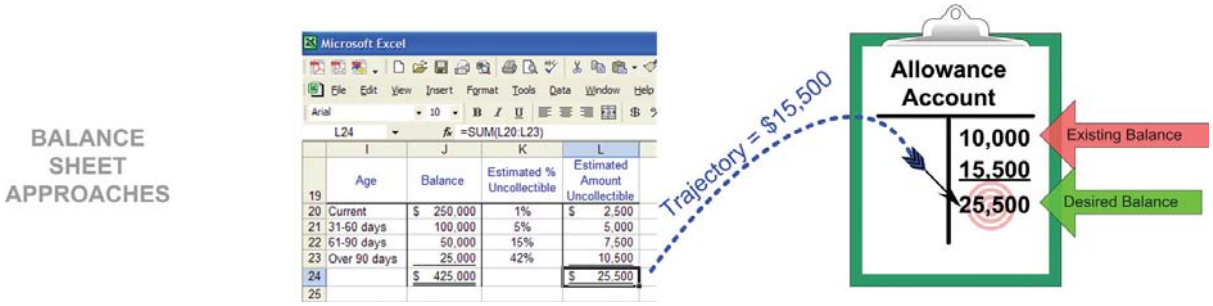


	I	J	K	L
19	Age	Balance	Estimated % Uncollectible	Estimated Amount Uncollectible
20	Current	$ 250,000	1%	$ 2,500
21	31-60 days	100,000	5%	5,000
22	61-90 days	50,000	15%	7,500
23	Over 90 days	25,000	42%	10,500
24		$ 425,000		$ 25,500
25				

Both the percentage of total receivables and the aging are termed "balance sheet approaches." In both cases, the allowance account is determined by an analysis of the outstanding accounts receivable on the balance sheet. Once the estimated amount for the allowance account is determined, a journal entry will be needed to bring the ledger into agreement. Assume that Ito's ledger revealed an Allowance for Uncollectible Accounts credit balance of $10,000 (prior to performing the above analysis). As a result of the analysis, it can be seen that a target balance of $25,500 is needed; necessitating the following adjusting entry:

12-31-X5	Uncollectible Accounts Expense	15,500	
	Allow. for Uncollectible Accounts		15,500
	To adjust the allowance account from a $10,000 balance to the target balance of $25,500 ($25,500 - $10,000)		

You should carefully note two important points: (1) with balance sheet approaches, the amount of the entry is based upon the needed change in the account (i.e., to go from an existing balance to the balance sheet target amount), and (2) the debit is to an expense account, reflecting the added cost associated with the additional amount of anticipated bad debts.



Rather than implement a balance sheet approach as above, some companies may follow a simpler income statement approach. With this equally acceptable allowance technique, an estimated percentage of sales (or credit sales) is simply debited to Uncollectible Accounts Expense and credited to the Allowance for Uncollectible Accounts each period. Importantly, this technique merely adds the estimated amount to the Allowance account. To illustrate, assume that Pick Company had sales during the year of $2,500,000, and it records estimated uncollectible accounts at a rate of 3% of total sales. Therefore, the appropriate entry to record bad debts cost is as follows:

12-31-X5	Uncollectible Accounts Expense	75,000	
	Allow. for Uncollectible Accounts		75,000
	To add 3% of sales to the allowance account ($2,500,000 X 3% = $75,000)		

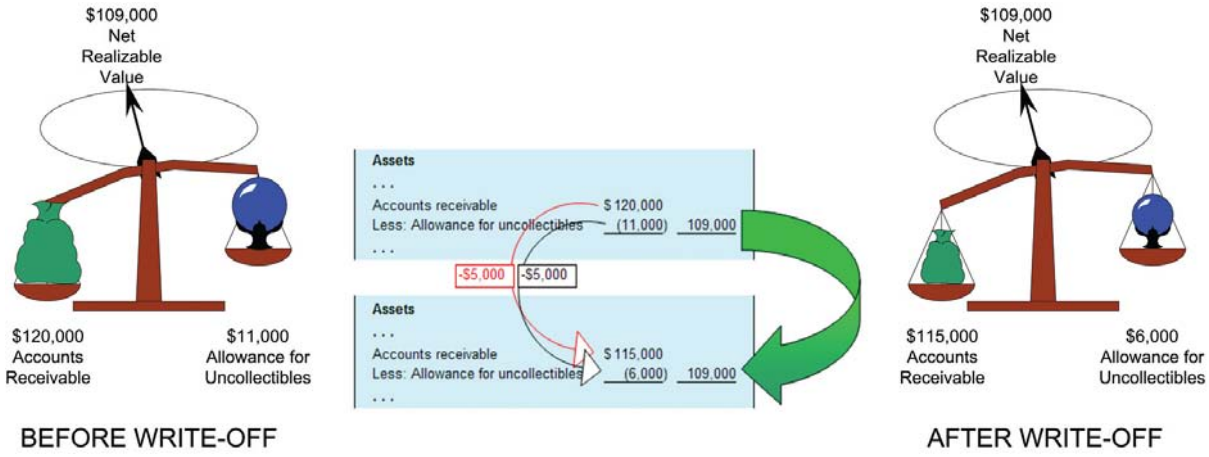
This entry would be the same even if there was already a balance in the allowance account. In other words, the income statement approach adds the calculated increment to the allowance, no matter how much may already be in the account from prior periods.

3.2 Writing off Uncollectible Accounts

Now, we have seen how to record uncollectible accounts expense, and establish the related allowance. But, how do we write off an individual account that is determined to be uncollectible? This part is easy. The following entry would be needed to write off a specific account that is finally deemed uncollectible:

3-15-X3	Allow. for Uncollectible Accounts	5,000	
	Accounts Receivable		5,000
	To record the write-off of an uncollectible account from Aziz		

Notice that the entry reduces both the allowance account and the related receivable, and has no impact on the income statement. Further, consider that the write off has no impact on the net realizable value of receivables, as shown by the following illustration of a $5,000 write off:



3.3 Collection of an Account Previously Written off

On occasion, a company may collect an account that was previously written off. For example, a customer that was once in dire financial condition may recover, and unexpectedly pay an amount that was previously written off. The entry to record the recovery involves two steps: (1) a reversal of the entry that was made to write off the account, and (2) recording the cash collection on the account:

6-16-X6	Accounts Receivable	1,000	
	Allow. for Uncollectible Accounts		1,000
	To reestablish an account previously written off via the reversal of the entry recorded at the time of write off		
6-16-X6	Cash	1,000	
	Accounts Receivable		1,000
	To record collection of account receivable		

It may trouble you to see the allowance account being increased because of the above entries, but the general idea is that another as yet unidentified account may prove uncollectible (consistent with the overall estimates in use). If this does not eventually prove to be true, an adjustment of the overall estimation rates may eventually be indicated.

3.4 Matching Achieved

Carefully consider that the allowance methods all result in the recording of estimated bad debts expense during the same time periods as the related credit sales. These approaches satisfy the desired matching of revenues and expenses.

3.5 Monitoring and Managing Accounts Receivable

A business must carefully monitor its accounts receivable. This chapter has devoted much attention to accounting for bad debts; but, don't forget that it is more important to try to avoid bad debts by carefully monitoring credit policies. A business should carefully consider the credit history of a potential credit customer, and be certain that good business practices are not abandoned in the zeal to make sales. It is customary to gather this information by getting a credit application from a customer, checking out credit references, obtaining reports from credit bureaus, and similar measures. Oftentimes, it becomes necessary to secure payment in advance or receive some other substantial guarantee such as a letter of credit from an independent bank. All of these steps are normal business practices, and no apologies are needed for making inquiries into the creditworthiness of potential customers. Many countries have very liberal laws that make it difficult to enforce collection on customers who decide not to pay or use "legal maneuvers" to escape their obligations. As a result, businesses must be very careful in selecting parties that are allowed trade credit in the normal course of business.

Equally important is to monitor the rate of collection. Many businesses have substantial dollars tied up in receivables, and corporate liquidity can be adversely impacted if receivables are not actively managed to insure timely collection. One ratio that is often monitored is the accounts receivable turnover ratio. That number reveals how many times a firm's receivables are converted to cash during the year. It is calculated as net credit sales divided by average net accounts receivable:

Accounts Receivable Turnover Ratio
=
Net Credit Sales/Average Net Accounts Receivable

To illustrate these calculations, assume Shoztic Corporation had annual net credit sales of $3,000,000, beginning accounts receivable (net of uncollectibles) of $250,000, and ending accounts receivable (net of uncollectibles) of $350,000. Shoztic's average net accounts receivable is $300,000 (($250,000 + $350,000)/2), and the turnover ratio is "10":

10 = $3,000,000/$300,000

A closely related ratio is the "days outstanding" ratio. It reveals how many days sales are carried in the receivables category:

Days Outstanding = 365 Days/Accounts Receivable Turnover Ratio

For Shoztic, the days outstanding calculation is:

36.5 = 365/10

By themselves, these numbers mean little. But, when compared to industry trends and prior years, they will reveal important signals about how well receivables are being managed. In addition, the calculations may provide an "early warning" sign of potential problems in receivables management and rising bad debt risks. Analysts carefully monitor the days outstanding numbers for signs of weakening business conditions. One of the first signs of a business downturn is a delay in the payment cycle. These delays tend to have ripple effects; if a company has trouble collecting its receivables, it won't be long before it may have trouble paying its own obligations.

4. Notes Receivable

A written promise from a client or customer to pay a definite amount of money on a specific future date is called a note receivable. Such notes can arise from a variety of circumstances, not the least of which is when credit is extended to a new customer with no formal prior credit history. The lender uses the note to make the loan more formal and enforceable. Such notes typically bear interest charges. The maker of the note is the party promising to make payment, the payee is the party to whom payment will be made, the principal is the stated amount of the note, and the maturity date is the day the note will be due.

Interest is the charge imposed on the borrower of funds for the use of money. The specific amount of interest depends on the size, rate, and duration of the note. In mathematical form: Interest = Principal X Rate X Time. For example, a $1,000, 60-day note, bearing interest at 12% per year, would result in interest of $20 ($1,000 X 12% X 60/360). In this calculation, notice that the "time" was 60 days out of a 360 day year. Obviously, a year normally has 365 days, so the fraction could have been 60/365. But, for simplicity, it is not uncommon for the interest calculation to be based on a presumed 360-day year or 30-day month. This presumption probably has its roots in olden days before electronic calculators, as the resulting interest calculations are much easier with this assumption in place. But, with today's technology, there is little practical use for the 360 day year, except that it tends to benefit the creditor by producing a little higher interest amount -- caveat emptor (Latin for "let the buyer beware")! The following illustrations will preserve this archaic approach with the goal of producing nice round numbers that are easy to follow.

4.1 Accounting for Notes Receivable

To illustrate the accounting for a note receivable, assume that Butchko initially sold $10,000 of merchandise on account to Hewlett. Hewlett later requested more time to pay, and agreed to give a formal three-month note bearing interest at 12% per year. The entry to record the conversion of the account receivable to a formal note is as follows:

6-1-X8	Notes Receivable	10,000	
	Accounts Receivable		10,000
	To record conversion of an account receivable to a note receivable		

When the note matures, Butchko's entry to record collection of the maturity value would appear as follows:

8-31-X8	Cash	10,300	
	Interest Income		300
	Notes Receivable		10,000
	To record collection of note receivable plus accrued interest of $300 ($10,000 X 12% X 90/360)		

4.2 A Dishonoured Note

If Hewlett dishonored the note at maturity (i.e., refused to pay), then Butchko would prepare the following entry:

8-31-X8	Accounts Receivable	10,300	
	Interest Income		300
	Notes Receivable		10,000
	To record dishonor of note receivable plus accrued interest of $300 ($10,000 X 12% X 90/360)		

The debit to Accounts Receivable in the above entry reflects the hope of eventually collecting all amounts due, including the interest, from the dishonoring party. If Butchko anticipated some difficulty in collecting the receivable, appropriate allowances would be established in a fashion similar to those illustrated earlier in the chapter.

4.3 Notes and Adjusting Entries

In the above illustrations for Butchko, all of the activity occurred within the same accounting year. However, if Butchko had a June 30 accounting year end, then an adjustment would be needed to reflect accrued interest at year-end. The appropriate entries illustrate this important accrual concept:

Entry to set up note receivable:

6-1-X8	Notes Receivable		10,000	
	Accounts Receivable			10,000
	To record conversion of an account receivable to a note receivable			

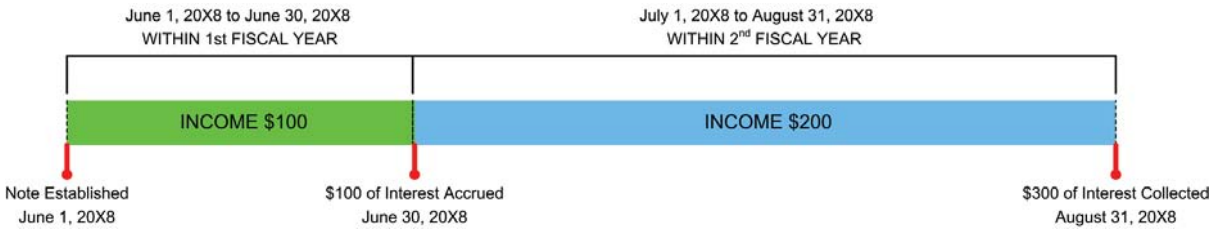
Entry to accrue interest at June 30 year end:

6-30-X8	Interest Receivable		100	
	Interest Income			100
	To record accrued interest at June 30 ($10,000 X 12% X 30/360 = $100)			

Entry to record collection of note (including amounts previously accrued at June 30):

8-31-X8	Cash		10,300	
	Interest Income			200
	Interest Receivable			100
	Notes Receivable			10,000
	To record collection of note receivable plus interest of $300 ($10,000 X 12% X 90/360); $100 of the total interest had been previously accrued			

The following drawing should aid your understanding of these entries:



Part 2
Inventory

Your goals for this "Inventory" chapter are to learn about:

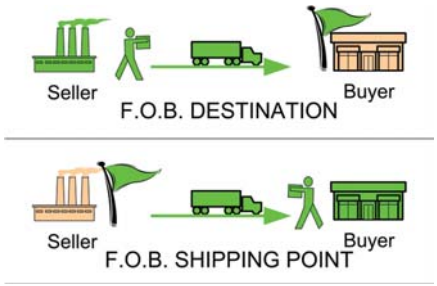
- The correct components to include in inventory.
- Inventory costing methods, including specific identification, FIFO, LIFO, and weighted-average techniques.
- The perpetual system for valuing inventory.
- Lower-of-cost-or-market inventory valuation adjustments.
- Two inventory estimation techniques: the gross profit and retail methods.
- Inventory management and monitoring methods, including the inventory turnover ratio.
- The impact of inventory errors.

5. The Components of Inventory

You have already seen that inventory for a merchandising business consists of the goods available for resale to customers. However, retailers are not the only businesses that maintain inventory. Manufacturers also have inventories related to the goods they produce. Goods completed and awaiting sale are termed "finished goods" inventory. A manufacturer may also have "work in process" inventory consisting of goods being manufactured but not yet completed. And, a third category of inventory is "raw material," consisting of goods to be used in the manufacture of products. Inventories are typically classified as current assets on the balance sheet. A substantial portion of the managerial accounting chapters of this book deal with issues relating to accounting for costs of manufactured inventory. For now, we will focus on general principles of inventory accounting that are applicable to most all enterprises.

5.1 Determining Which Goods to Include in Inventory

Recall from the merchandising chapter the discussion of freight charges. In that chapter, F.O.B. terms were introduced, and the focus was on which party would bear the cost of freight. But, F.O.B. terms also determine when goods are (or are not) included in inventory. Technically, goods in transit belong to the party holding legal ownership. Ownership depends on the F.O.B. terms. Goods sold F.O.B. destination do not belong to the purchaser until they arrive at their final destination. Goods sold F.O.B. shipping point become property of the purchaser once shipped by the seller. Therefore, when determining the amount of inventory owned at year end, goods in transit must be considered in light of the F.O.B. terms. In the case of F.O.B. shipping point, for instance, a buyer would need to include as inventory the goods that are being transported but not yet received. The diagram at right is meant to show who includes goods in transit, with ownership shifting at the F.O.B. point noted with a "flag."



Another problem area pertains to goods on consignment. Consigned goods describe products that are in the custody of one party, but belong to another. Thus, the party holding physical possession is not the legal owner. The person with physical possession is known as the consignee. The consignee is responsible for taking care of the goods and trying to sell them to an end customer. In essence, the consignee is acting as a sales agent. The consignor is the party holding legal ownership/title to the consigned goods in inventory. Because consigned goods belong to the consignor, they should be included in the inventory of the consignor -- not the consignee!

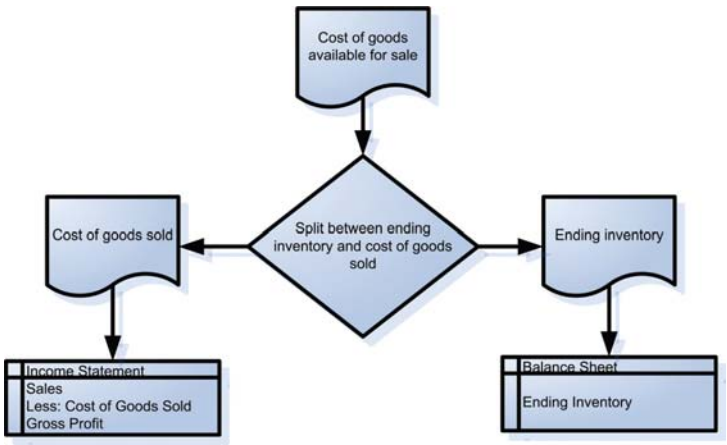
Consignments arise when the owner desires to place inventory in the hands of a sales agent, but the sales agent does not want to pay for those goods unless the agent is able to sell them to an end customer. For example, auto part manufacturers may produce many types of parts that are very specialized and expensive, such as braking systems. A retail auto parts store may not be able to afford to stock every variety. In addition, there is the real risk of ending up with numerous obsolete units. But, the manufacturer desperately needs these units in the retail channel -- when brakes fail, customers will go to the source that can provide an immediate solution. As a result, the manufacturer may consign the units to auto parts retailers.

Conceptually, it is fairly simple to understand the accounting for consigned goods. Practically, they pose a recordkeeping challenge. When examining a company's inventory on hand, special care must be taken to identify both goods consigned out to others (which are to be included in inventory) and goods consigned in (which are not to be included in inventory). Obviously, if the consignee does sell the consigned goods to an end user, the consignee would keep a portion of the sales price, and remit the balance to the consignor. All of this activity requires a good accounting system to be able to identify which units are consigned, track their movement, and know when they are actually sold or returned.

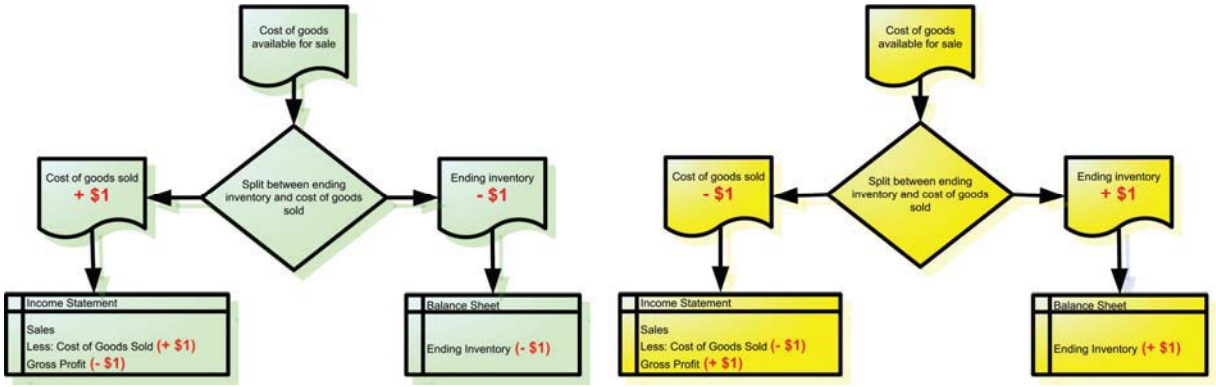
6. Inventory Costing Methods

Even a casual observer of the stock markets will note that stock values often move significantly on information about a company's earnings. Now, you may be wondering why a discussion of inventory would begin with this observation. The reason is that inventory measurement bears directly on the determination of income! Recall from earlier chapters this formulation:

Notice that the goods available for sale are "allocated" to ending inventory and cost of goods sold. In the graphic, the units of inventory appear as physical units. But, in a company's accounting records, this flow must be translated into units of money. After all, the balance sheet expresses inventory in money, not units. And, cost of goods sold on the income statement is also expressed in money:



This means that allocating $1 less of the total cost of goods available for sale into ending inventory will necessarily result in placing $1 more into cost of goods sold (and vice versa). Further, as cost of goods sold is increased or decreased, there is an opposite effect on gross profit. Remember, sales minus cost of goods sold equals gross profit. Thus, a critical factor in determining income is the allocation of the cost of goods available for sale between ending inventory and cost of goods sold:



6.1 Determining the Cost of Ending Inventory

In earlier chapters, the dollar amount for inventory was simply given. Not much attention was given to the specific details about how that cost was determined. To delve deeper into this subject, let's begin by considering a general rule: Inventory should include all costs that are "ordinary and necessary" to put the goods "in place" and "in condition" for their resale.

This means that inventory cost would include the invoice price, freight-in, and similar items relating to the general rule. Conversely, "carrying costs" like interest charges (if money was borrowed to buy the inventory), storage costs, and insurance on goods held awaiting sale would not be included in inventory accounts; instead those costs would be expensed as incurred. Likewise, freight-out and sales commissions would be expensed as a selling cost rather than being included with inventory.

6.2 Costing Methods

Once the unit cost of inventory is determined via the preceding rules of logic, specific costing methods must be adopted. In other words, each unit of inventory will not have the exact same cost, and an assumption must be implemented to maintain a systematic approach to assigning costs to units on hand (and to units sold).

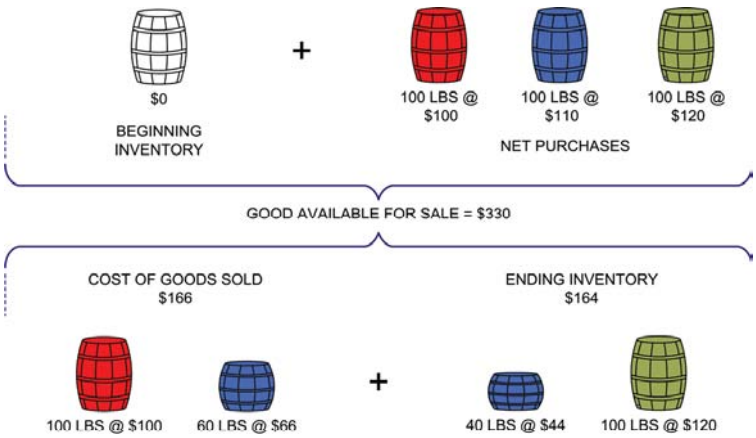
To solidify this point, consider a simple example: Mueller Hardware has a storage barrel full of nails. The barrel was restocked three times with 100 pounds of nails being added at each restocking. The first batch cost Mueller $100, the second batch cost Mueller $110, and the third batch cost Mueller $120. Further, the barrel was never allowed to empty completely and customers have picked all around in the barrel as they bought nails from Mueller (and new nails were just dumped in on top of the remaining pile at each restocking). So, its hard to say exactly which nails are "physically" still in the barrel. As you might expect, some of the nails are probably from the first purchase, some from the second purchase, and some from the final purchase. Of course, they all look about the same. At the end of the accounting period, Mueller weighs the barrel and decides that 140 pounds of nails are on hand (from the 300 pounds available). The accounting question you must consider is: what is the cost of the ending inventory? Remember, this is not a trivial question, as it will bear directly on the determination of income! To deal with this very common accounting question, a company must adopt an inventory costing method (and that method must be applied consistently from year to year). The methods from which to choose are varied, generally consisting of one of the following:

- First-in, first-out (FIFO)
- Last-in, first-out (LIFO)
- Weighted-average

Each of these methods entail certain cost-flow assumptions. Importantly, the assumptions bear no relation to the physical flow of goods; they are merely used to assign costs to inventory units. (Note: FIFO and LIFO are pronounced with a long "i" and long "o" vowel sound). Another method that will be discussed shortly is the specific identification method; as its name suggests, it does not depend on a cost flow assumption.

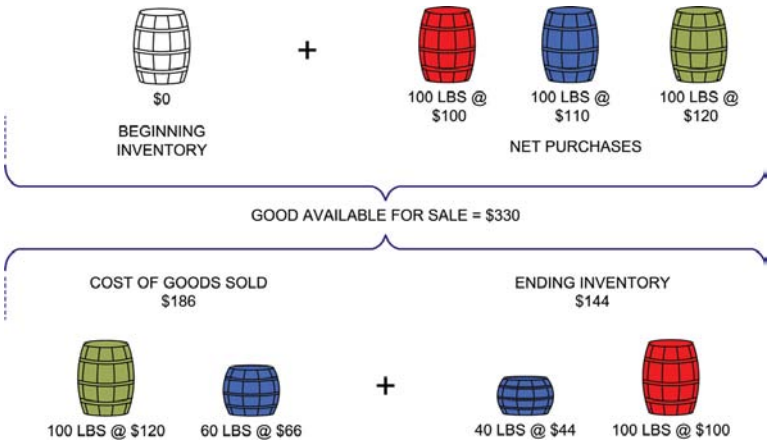
6.3 First-in, First-out Calculations

With first-in, first-out, the oldest cost (i.e., the first in) is matched against revenue and assigned to cost of goods sold. Conversely, the most recent purchases are assigned to units in ending inventory. For Mueller's nails the FIFO calculations would look like this:



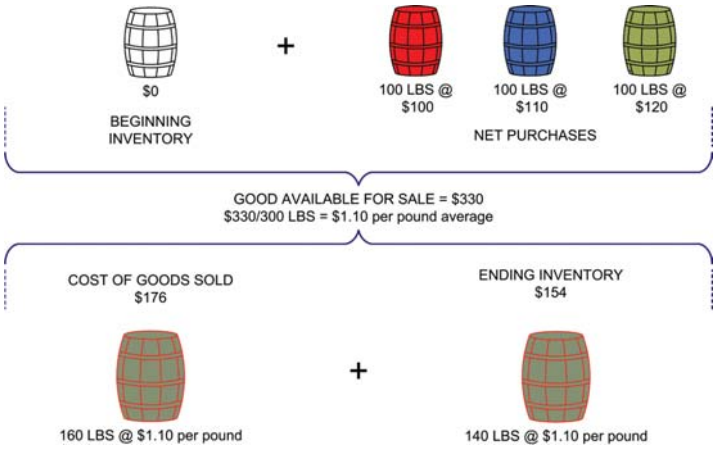
6.4 Last-in, First-out Calculations

Last-in, first-out is just the reverse of FIFO; recent costs are assigned to goods sold while the oldest costs remain in inventory:



6.5 Weighted average Calculations

The weighted-average method relies on average unit cost to calculate cost of units sold and ending inventory. Average cost is determined by dividing total cost of goods available for sale by total units available for sale. Mueller Hardware paid $330 for 300 pounds of nails, producing an average cost of $1.10 per pound ($330/300). The ending inventory consisted of 140 pounds, or $154. The cost of goods sold was $176 (160 pounds X $1.10):



6.6 Preliminary Recap and Comparison

The preceding discussion is summarized by the following comparative illustrations. Examine each, noting how the cost of beginning inventory and purchases flow to ending inventory and cost of goods sold. As you examine this drawing, you need to know that accountants usually adopt one of these cost flow assumptions to track inventory costs within the accounting system. The actual physical flow of the inventory may or may not bear a resemblance to the adopted cost flow assumption.

6.7 Detailed Illustrations

Having been introduced to the basics of FIFO, LIFO, and weighted-average, it is now time to look at a more comprehensive illustration. In this illustration, there will also be some beginning inventory that is carried over from the preceding year. Assume that Gonzales Chemical Company had a beginning inventory balance that consisted of 4,000 units with a cost of $12 per unit. Purchases and sales are shown in the schedule. The schedule suggests that Gonzales should have 5,000 units on hand at the end of the year. Assume that Gonzales conducted a physical count of inventory and confirmed that 5,000 units were actually on hand.

Based on the information in the schedule, we know that Gonzales will report sales of $304,000. This amount is the result of selling 7,000 units at $22 ($154,000) and 6,000 units at $25 ($150,000). The dollar amount of sales will be reported in the income statement, along with cost of goods sold and gross profit. How much is cost of goods sold and gross profit? The answer will depend on the cost flow assumption adopted by Gonzales.

6.8 FiFO

If Gonzales uses FIFO, ending inventory and cost of goods sold calculations are as follows, producing the financial statements at right:

Beginning inventory **4,000 X $12 = $48,000**	+	**Net purchases ($232,000 total)** **6,000 X $16 = $96,000** **8,000 X $17 = $136,000**
=		
Cost of goods available for sale ($280,000 total) **4,000 X $12 = $48,000** **6,000 X $16 = $96,000** **8,000 X $17 = $136,000**		
=		
Ending inventory ($85,000) **5,000 X $17 = $85,000**	+	**Cost of goods sold ($195,000 total)** **4,000 X $12 = $48,000** **6,000 X $16 = $96,000** **3,000 X $17 = $51,000**

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

REVENUES		
Net sales		$304,000
COST OF GOODS SOLD		
Beginning inventory, Jan. 1	$ 48,000	
Net purchases	232,000	
Goods available for sale	$280,000	
Less: Ending inventory, Dec. 31	85,000	
Cost of goods sold		195,000
GROSS PROFIT		$109,000
. . .		

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

ASSETS	
. . .	
Inventory	85,000

6.9 LIFO

If Gonzales uses LIFO, ending inventory and cost of goods sold calculations are as follows, producing the financial statements at right:

Beginning inventory **4,000 X $12 = $48,000**	**+**	**Net purchases ($232,000 total)** **6,000 X $16 = $96,000** **8,000 X $17 = $136,000**
=		
Cost of goods available for sale ($280,000 total) **4,000 X $12 = $48,000** **6,000 X $16 = $96,000** **8,000 X $17 = $136,000**		
=		
Ending inventory ($64,000) **4,000 X $12 = $48,000** **1,000 X $16 = $16,000**	**+**	**Cost of goods sold ($216,000 total)** **8,000 X $17 = $136,000** **5,000 X $16 = $80,000**

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

REVENUES		
Net sales		$304,000
COST OF GOODS SOLD		
Beginning inventory, Jan. 1	$ 48,000	
Net purchases	232,000	
Goods available for sale	$280,000	
Less: Ending inventory, Dec. 31	64,000	
Cost of goods sold		216,000
GROSS PROFIT		$ 88,000
. . .		

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

ASSETS	
. . .	
Inventory	64,000

6.10 Weighted Average

If the company uses the weighted-average method, ending inventory and cost of goods sold calculations are as follows, producing the financial statements at right:

Cost of goods available for sale	**$280,000**
Divided by units (4,000 + 6,000 +	**18,000**
Average unit cost (note: do not	**$15.5555 per**
Ending inventory (5,000 units @	**$77,778**
Cost of goods sold (13,000 units @ $15.5555)	**$202,222**

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

REVENUES		
Net sales		$304,000
COST OF GOODS SOLD		
Beginning inventory, Jan. 1	$ 48,000	
Net purchases	232,000	
Goods available for sale	$280,000	
Less: Ending inventory, Dec. 31	77,778	
Cost of goods sold		202,222
GROSS PROFIT		$101,778
. . .		

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

ASSETS	
. . .	
Inventory	77,778

6.11 Comparing Inventory Methods

The following table reveals that the amount of gross profit and ending inventory numbers appear quite different, depending on the inventory method selected:

	FIFO	LIFO	Weighted-Average
Sales	**$304,000**	**$304,000**	**$304,000**
Cost of Goods Sold	**195,000**	**216,000**	**202,222**
Gross Profit	**$109,000**	**$ 88,000**	**$101,778**
Ending Inventory	**$ 85,000**	**$ 64,000**	**$ 77,778**

The results above are consistent with the general rule that LIFO results in the lowest income (assuming rising prices, as was evident in the Gonzales example), FIFO the highest, and weighted average an amount in between. Because LIFO tends to depress profits, you may wonder why a company would select this option; the answer is sometimes driven by income tax considerations. Lower income produces a lower tax bill, thus companies will tend to prefer the LIFO choice. Usually, financial accounting methods do not have to conform to methods chosen for tax purposes. However, in the USA, LIFO "conformity rules" generally require that LIFO be used for financial reporting if it is used for tax purposes. In many countries LIFO is not permitted for tax or accounting purposes.

Accounting theorists may argue that financial statement presentations are enhanced by LIFO because it matches recently incurred costs with the recently generated revenues. Others maintain that FIFO is better because recent costs are reported in inventory on the balance sheet. Whichever side of this debate you find yourself, it is important to note that the inventory method in use must be clearly communicated in the financial statements and related notes. Companies that use LIFO will frequently augment their reports with supplement data about what inventory would be if FIFO were instead used. No matter which method is selected, consistency in method of application should be maintained. This does not mean that changes cannot occur; however, changes should only be made if financial accounting is improved.

6.12 Specific Identification

As was noted earlier, another inventory method is specific identification. This method requires a business to identify each unit of merchandise with the unit's cost and retain that identification until the inventory is sold. Once a specific inventory item is sold, the cost of the unit is assigned to cost of goods sold. Specific identification requires tedious record keeping and is typically only used for inventories of uniquely identifiable goods that have a fairly high per-unit cost (e.g., automobiles, fine jewelry, and so forth).

7. Perpetual Inventory Systems

All of the preceding illustrations were based on the periodic inventory system. In other words, the ending inventory was counted and costs were assigned only at the end of the period. A more robust system is the perpetual system. With a perpetual system, a running count of goods on hand is maintained at all times. Modern information systems facilitate detailed perpetual cost tracking for those goods.

7.1 Perpetual FIFO

The following table reveals the FIFO application of the perpetual inventory system for Gonzales:

Date	Purchases	Sales	Cost of Goods Sold	Balance
1-Jan				4,000 X $12 = $ 48,000
5-Mar	6,000 X $16 = $ 96,000			4,000 X $12 = $ 48,000 6,000 X $16 = $ 96,000 $144,000
17-Apr		7,000 X $22 = $154,000	4,000 X $12 = $ 48,000 3,000 X $16 = $ 48,000 $ 96,000	3,000 X $16 = $ 48,000
7-Sep	8,000 X $17 = $136,000			3,000 X $16 = $ 48,000 8,000 X $17 = $136,000 $184,000
11-Nov		6,000 X $25 = $150,000	3,000 X $16 = $ 48,000 3,000 X $17 = $ 51,000 $ 99,000	5,000 X $17 = $ 85,000
31-Dec				5,000 X $17 = $ 85,000

Two points come to mind when examining this table. First, there is considerable detail in tracking inventory using a perpetual approach; thank goodness for computers. Second, careful study is needed to discern exactly what is occurring on each date. For example, look at April 17 and note that 3,000 units remain after selling 7,000 units. This is determined by looking at the preceding balance data on March 5 (consisting of 10,000 total units (4,000 + 6,000)), and removing 7,000 units as follows: all of the 4,000 unit layer, and 3,000 of the 6,000 unit layer. Remember, this is the FIFO application, so the layers are peeled away based on the chronological order of their creation. In essence, each purchase and sale transaction impacts the residual composition of the layers associated with the item of inventory. Realize that this type of data must be captured and maintained for each item of inventory if the perpetual system is to be utilized; a task that was virtually impossible before cost effective computer solutions became commonplace. Today, the method is quite common, as it provides better "real-time" data needed to run a successful business.

7.2 Journal Entries

The table above provides information needed to record purchase and sale information. Specifically, Inventory is debited as purchases occur and credited as sales occur. Following are the entries:

3-5-XX	Inventory	96,000	
	Accounts Payable		96,000
	Purchased inventory on account (6,000 X $16)		
4-17-XX	Accounts Receivable	154,000	
	Sales		154,000
	Sold merchandise on account (7,000 X $22)		
4-17-XX	Cost of Goods Sold	96,000	
	Inventory		96,000
	To record the cost of merchandise sold ((4,000 X $12) + (3,000 X $16))		
9-7-XX	Inventory	136,000	
	Accounts Payable		136,000
	Purchased inventory on account (8,000 X $17)		
11-11-XX	Accounts Receivable	150,000	
	Sales		150,000
	Sold merchandise on account (6,000 X $25)		
11-11-XX	Cost of Goods Sold	99,000	
	Inventory		99,000
	To record the cost of merchandise sold ((3,000 X $16) + (3,000 X $17))		

Let's see how these entries impact certain ledger accounts and the resulting financial statements:

ACCOUNT: Inventory

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ 48,000
Mar. 5, 20XX	Purchase transaction	$ 96,000		144,000
Apr. 17, 20XX	Sale transaction		$ 96,000	48,000
Sept. 7, 20XX	Purchase transaction	136,000		184,000
Nov. 11, 20XX	Sale transaction		99,000	85,000

ACCOUNT: Sales

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction		$154,000	154,000
Nov. 11, 20XX	Sale transaction		150,000	304,000

ACCOUNT: Cost of goods sold

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction	$ 96,000		96,000
Nov. 11, 20XX	Sale transaction	99,000		195,000

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

Net sales	$304,000
Cost of goods sold	195,000
Gross profit	$109,000
Expenses	. . .

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

Assets	
. . .	
Inventory	85,000

If you are very perceptive, you will note that this is the same thing that resulted under the periodic FIFO approach introduced earlier. So, another general observation is in order: The FIFO method will produce the same financial statement results no matter whether it is applied on a periodic or perpetual basis. This occurs because the beginning inventory and early purchases are peeled away and charged to cost of goods sold -- whether the associated calculations are done "as you go" (perpetual) or "at the end of the period" (periodic).

7.3 Perpetual LIFO

LIFO can also be applied on a perpetual basis. This time, the results will not be the same as the periodic LIFO approach (because the "last-in" layers are constantly being peeled away, rather than waiting until the end of the period). The following table reveals the application of a perpetual LIFO approach. Study it carefully, this time noting that sales transactions result in a peeling away of the most recent purchase layers. The journal entries are not repeated here for the LIFO approach. Do note, however, that the accounts would be the same (as with FIFO); only the amounts would change.

Date	Purchases	Sales	Cost of Goods Sold	Balance
1-Jan				4,000 X $12 = $ 48,000
5-Mar	6,000 X $16 = $ 96,000			4,000 X $12 = $ 48,000 6,000 X $16 = $ 96,000 $144,000
17-Apr		7,000 X $22 = $154,000	6,000 X $16 = $ 6,000 1,000 X $12 = $ 12,000 $108,000	3,000 X $12 = $ 36,000
7-Sep	8,000 X $17 = $136,000			3,000 X $12 = $ 36,000 8,000 X $17 = $136,000 $172,000
11-Nov		6,000 X $25 = $150,000	6,000 X $17 = $102,000	3,000 X $12 = $ 36,000 2,000 X $17 = $ 34,000 $ 70,000
31-Dec				3,000 X $12 = $ 36,000 2,000 X $17 = $ 34,000 $ 70,000

ACCOUNT: Inventory

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ 48,000
Mar. 5, 20XX	Purchase transaction	$ 96,000		144,000
Apr. 17, 20XX	Sale transaction		$108,000	36,000
Sept. 7, 20XX	Purchase transaction	136,000		172,000
Nov. 11, 20XX	Sale transaction		102,000	70,000

ACCOUNT: Sales

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction		$154,000	154,000
Nov. 11, 20XX	Sale transaction		150,000	304,000

ACCOUNT: Cost of goods sold

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction	$108,000		108,000
Nov. 11, 20XX	Sale transaction	102,000		210,000

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

Net sales	$304,000
Cost of goods sold	210,000
Gross profit	$ 94,000
Expenses	

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

Assets	
. . .	
Inventory	70,000

7.4 Moving Average

The average method can also be applied on a perpetual basis, earning it the name "moving average" approach. This technique is considerably more involved, as a new average unit cost must be computed with each purchase transaction. For the last time, we will look at the Gonzales Chemical Company data:

$144,000/10,000 units
$14.40 per unit

$179,200/11,000 units
$16.2909 per unit

Date	Purchases	Sales	Cost of Goods Sold	Balance
1-Jan				4,000 X $12 = $ 48,000
5-Mar	6,000 X $16 = $ 96,000			4,000 X $12 = $ 48,000 6,000 X $16 = $ 96,000 $144,000
17-Apr		7,000 X $22 = $154,000	7,000 X $14.40 = $100,800	3,000 X $14.40 = $ 43,200
7-Sep	8,000 X $17 = $136,000			3,000 X $14.40 = $ 43,200 8,000 X $17 = $136,000 $179,200
11-Nov		6,000 X $25 = $150,000	6,000 X $16.2909 = $97,745	5,000 X $16.2909 = $ 81,455
31-Dec				5,000 X $16.2909 = $ 81,455

The resulting financial data using the moving-average approach are:

ACCOUNT: Inventory

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ 48,000
Mar. 5, 20XX	Purchase transaction	$ 96,000		144,000
Apr. 17, 20XX	Sale transaction		$100,800	43,200
Sept. 7, 20XX	Purchase transaction	136,000		179,200
Nov. 11, 20XX	Sale transaction		97,745	81,455

ACCOUNT: Sales

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction		$154,000	154,000
Nov. 11, 20XX	Sale transaction		150,000	304,000

ACCOUNT: Cost of goods sold

Date	Description	Debit	Credit	Balance
Jan. 1, 20XX	Balance forward			$ -
Apr. 17, 20XX	Sale transaction	$100,800		100,800
Nov. 11, 20XX	Sale transaction	97,745		198,545

GONZALES CHEMICAL COMPANY
Income Statement
For the Year Ending December 31, 20XX

Net sales	$304,000
Cost of goods sold	198,545
Gross profit	$ 94,000
Expenses	. . .

GONZALES CHEMICAL COMPANY
Balance Sheet
December 31, 20XX

Assets	
. . .	
Inventory	81,455

As with the periodic system, observe that the perpetual system produced the lowest gross profit via LIFO, the highest with FIFO, and the moving-average fell in between.

8. Lower of Cost or Market Adjustments

Although every attempt is made to prepare and present financial data that are free from bias, accountants do employ a degree of conservatism. Conservatism dictates that accountants avoid overstatement of assets and income. Conversely, liabilities would tend to be presented at higher amounts in the face of uncertainty. This is not a hardened rule, just a general principle of measurement.

In the case of inventory, a company may find itself holding inventory that has an uncertain future; meaning the company does not know if or when it will sell. Obsolescence, over supply, defects, major price declines, and similar problems can contribute to uncertainty about the "realization" (conversion to cash) for inventory items. Therefore, accountants evaluate inventory and employ "lower of cost or market" considerations. This simply means that if inventory is carried on the accounting records at greater than its market value, a write-down from the recorded cost to the lower market value would be made. In essence, the Inventory account would be credited, and a Loss for Decline in Market Value would be the offsetting debit. This debit would be reported in the income statement as a charge against (reduction in) income.

8.1 Measuring Market Value

Market values are very subjective. In the case of inventory, applicable accounting rules define "market" as the replacement cost (not sales price!) of the goods. In other words, what would it cost for the company to acquire or reproduce the inventory?

However, the lower-of-cost-or-market rule can become slightly more complex because the accounting rules further specify that market not exceed a ceiling amount known as "net realizable value" (NRV = selling price minus completion and disposal costs). The reason is this: occasionally "replacement cost" for an inventory item could be very high (e.g., a supply of slide rules at an office supply store) even though there is virtually no market for the item and it is unlikely to produce much net value when it is sold. Therefore, "market" for purposes of the lower of cost or market test should not exceed the net realizable value. Additionally, the rules stipulate that "market" should not be less than a floor amount, which is the net realizable value less a normal profit margin.

What we have then, is the following decision process:

Step 1: Determine Market -- replacement cost, not to exceed the ceiling nor be less than the floor.

Step 2: Report inventory at the lower of its cost or market (as determined in step 1).

To illustrate, consider the following four different inventory items, and note that the "cost" is shaded in light yellow and the appropriate "market value" is shaded in tan (step 1). The reported value is in the final row, and corresponds to the lower of cost or market:

	Item A	Item B	Item C	Item D
Cost	**$1,000**	**$2,500**	**$3,000**	**$4,000**
Vs. "Market":				
Replacement cost	**$1,200**	**$2,400**	**$3,000**	**$2,000**
Net realizable value (ceiling)	**$1,400**	**$2,800**	**$2,800**	**$3,000**
NRV less normal profit margin (floor)	**$1,100**	**$2,200**	**$2,200**	**$2,500**
VALUE TO REPORT	**$1,000**	**$2,400**	**$2,800**	**$2,500**

8.2 Application of the Lower-of-Cost-or-Market Rule

Despite the apparent focus on detail, it is noteworthy that the lower of cost or market adjustments can be made for each item in inventory, or for the aggregate of all the inventory. In the latter case, the good offsets the bad, and a write-down is only needed if the overall market is less than the overall cost. In any event, once a write-down is deemed necessary, the loss should be recognized in income and inventory should be reduced. Once reduced, the Inventory account becomes the new basis for valuation and reporting purposes going forward. Write-ups of previous write-downs (e.g., if slide rules were to once again become hot selling items and experience a recovery in value) would not be permitted under GAAP.

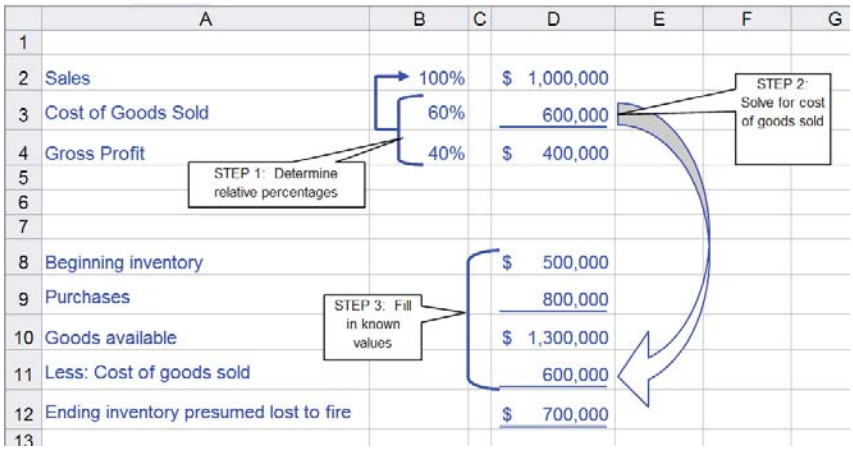
9. Inventory Estimation Techniques

Whether a company uses a periodic or perpetual inventory system, a physical count of goods on hand should occur from time to time. The quantities determined via the physical count are presumed to be correct, and any differences between the physical count and amounts reflected in the accounting records should be matched with an adjustment to the accounting records. Sometimes, however, a physical count may not be possible or is not cost effective. Then, estimation methods are employed.

9.1 Gross Profit Method

One such estimation technique is the gross profit method. This method might be used to estimate inventory on hand for purposes of preparing monthly or quarterly financial statements, and certainly would come into play if a fire or other catastrophe destroyed the inventory. Such estimates are often used by insurance companies to establish the amount that has been lost by an insured party. Very simply, a company's historical normal gross profit rate (i.e., gross profit as a percentage of sales) would be used to estimate the amount of gross profit and cost of sales. Once these data are known, it is relatively simple to project the lost inventory.

For example, assume that Tiki's inventory was destroyed by fire. Sales for the year, prior to the date of the fire were $1,000,000, and Tiki usually sells goods at a 40% gross profit rate. Therefore, Tiki can readily estimate that cost of goods sold was $600,000. Tiki's beginning of year inventory was $500,000, and $800,000 in purchases had occurred prior to the date of the fire. The inventory destroyed by fire can be estimated via the gross profit method, as shown.



9.2 Retail Method

A method that is widely used by merchandising firms to value or estimate ending inventory is the retail method. This method would only work where a category of inventory sold at retail has a consistent mark-up. The cost-to-retail percentage is multiplied times ending inventory at retail. Ending inventory at retail can be determined by a physical count of goods on hand, at their retail value. Or, sales might be subtracted from goods available for sale at retail. This option is shown in the following example.

To illustrate, Crock Buster, a specialty cookware store, sells pots that cost $7.50 for $10 -- yielding a cost to retail percentage of 75%. The beginning inventory totaled $200,000 (at cost), purchases were $300,000 (at cost), and sales totaled $460,000 (at retail). The calculations suggest an ending inventory that has a cost of $155,000. In reviewing these calculations, note that the only "givens" are circled in yellow. These three data points are manipulated by the cost to retail percentage to solve for several unknowns. Be careful to note the percentage factor is divided within the red arrows and multiplied within the blue.

	A	B	C	D
1		At Cost (75% of retail)		At Retail
2	Beginning Inventory	$ 200,000	÷ 0.75	$ 266,667
3	Purchases	300,000	÷ 0.75	400,000
4	Goods available	$ 500,000		$ 666,667
5	Sales	345,000	0.75 X	460,000
6	Ending inventory	$ 155,000		$ 206,667
7				

10. Inventory Management

The best run companies will minimize their investment in inventory. Inventory is costly and involves the potential for loss and spoilage. In the alternative, being out of stock may result in lost customers, so a delicate balance must be maintained. Careful attention must be paid to the inventory levels. One ratio that is often used to monitor inventory is the Inventory Turnover Ratio. This ratio shows the number of times that a firm's inventory balance was turned ("sold") during a year. It is calculated by dividing cost of sales by the average inventory level:

Inventory Turnover Ratio
=
Cost of Goods Sold/Average Inventory

If a company's average inventory was $1,000,000, and the annual cost of goods sold was $8,000,000, you would deduce that inventory turned over 8 times (approximately once every 45 days). This could be good or bad depending on the particular business; if the company was a baker it would be very bad news, but a lumber yard might view this as good. So, general assessments are not in order. What is important is to monitor the turnover against other companies in the same line of business, and against prior years' results for the same company. A declining turnover rate might indicate poor management, slow moving goods, or a worsening economy. In making such comparisons and evaluations, you should now be clever enough to recognize that the choice of inventory method affects the reported amounts for cost of goods sold and average inventory. As a result, the impacts of the inventory method in use must be considered in any analysis of inventory turnover ratios.

11. Inventory Errors

In the process of maintaining inventory records and the physical count of goods on hand, errors may occur. It is quite easy to overlook goods on hand, count goods twice, or simply make mathematical mistakes. Therefore, it is vital that accountants and business owners fully understand the effects of inventory errors and grasp the need to be careful to get these numbers as correct as possible.

A general rule is that overstatements of ending inventory cause overstatements of income, while understatements of ending inventory cause understatements of income. For instance, compare the following correct and incorrect scenario -- where the only difference is an overstatement of ending inventory by $1,000 (note that purchases were correctly recorded -- if they had not, the general rule of thumb would not hold):

	Correct	Incorrect
Beginning inventory	$ 5,000	$ 5,000
Purchases	11,000	11,000
Cost of goods available for sale	$16,000	$16,000
Ending inventory	4,000	5,000
Cost of goods sold	$12,000	$11,000
Sales	$25,000	$25,000
Cost of goods sold	12,000	11,000
Gross profit	$13,000	$14,000

Had the above inventory error been an understatement ($3,000 instead of the correct $4,000), then the ripple effect would have caused an understatement of income by $1,000. Inventory errors tend to be counterbalancing. That is, one year's ending inventory error becomes the next year's beginning inventory error. The general rule of thumb is that overstatements of beginning inventory cause that year's income to be understated, while understatements of beginning inventory cause overstatements of income. Examine the following table where the only error relates to beginning inventory balances:

	Correct	Incorrect
Beginning inventory	$ 4,000	$ 5,000
Purchases	11,000	11,000
Cost of goods available for sale	$15,000	$16,000
Ending inventory	3,000	3,000
Cost of goods sold	$12,000	$13,000
Sales	$25,000	$25,000
Cost of goods sold	12,000	13,000
Gross profit	$13,000	$12,000

Hence, if the above data related to two consecutive years, the total income would be correct ($13,000 + $13,000 = $14,000 + $12,000). However, the amount for each year is critically flawed.