**ACCOUNTING FOR PLANT ASSETS AND DEPPRECIATION**

Businesses make money by selling products and services. A company needs an infrastructure of long-term operating assets in order to profitably produce and distribute these products and services. For example, East Africa Breweries LTD needs factories in which to manufacture the alcohol that it sells. It also needs patents on its unique technology to protect its competitive edge in the marketplace. A factory is an example of a long-term operating asset that is classified as property, plant, and equipment. A patent is an example of an intangible asset.

**Property, plant, and equipment (PPE)** refers to tangible, long-lived assets acquired for use in business operations. This category includes land, buildings, machinery, equipment, and furniture. **Intangible** **assets** are long-lived assets that are used in the operation of a business but do not have physical substance. In most cases, they provide their owners with competitive advantages over other firms. Typical intangible assets are patents, licenses, franchises, and goodwill.

Long-term operating assets are acquired to be used over the course of several years. The decision to acquire a long-term asset depends on whether the future cash flows generated by the asset are expected to be large enough to justify the asset cost. The process of evaluating a long-term project is called **capital budgeting**.

PPE can be acquired in a number of ways:

* By purchase- in cash, credit or in exchange for another asset (trade in). How do you account for this?
* By leasing

**Leases** are often short-term rental agreements in which one party, the **lessee**, is granted the right to use property owned by another party, the **lessor**. For example, as a student, you may decide to lease (rent) an apartment to live in while you are attending college. The owner of the apartment (lessor) will probably require you to sign a lease specifying the terms of the arrangement. The lease states the period of time in which you will live in the apartment, the amount of rent you will pay, and when each rent payment is due. When the lease expires, you will either sign a new lease or move out of the apartment, which would then be rented to someone else. Accounting for this type of rental agreement, called an **operating lease**, is straightforward. When rent is paid each month, you record the following journal entry:

DR: Rent Expense XX

Cash/ Rent Payable XX

In a **capital lease** a leasing transaction that is recorded as a purchase by the lessee. E.g, Safaricom may enter into a lease agreement to rent a piece of land to erect their masts for 50 years at a total cost of Ksh. 20,000,000.00 payable uniformly at the end of every year. At the beginning, the journal entry will be:

DR: Leased land 20,000,000.00

CR: Lease Liability 20,000,000.00

(to record land acquired on a 50 year capital lease)

At the end of first year, when the first instalment of lease payment is made, the entry will be:

DR: Lease expense 400,000.00

CR: Cash or Lease expenses payable 400,000.00

* Self construction

Sometimes buildings or equipment are constructed by a company for its own use. This may be done to save on construction costs, to utilize idle facilities or idle workers, or to meet a special set of technical specifications. Self-constructed assets, like purchased assets, are recorded at cost, including all expenditures incurred to build the asset and make it ready for its intended use. These costs include the materials used to build the asset, the construction labor, and some reasonable share of the general company overhead (electricity, insurance, supervisors salaries, etc.) during the time of construction.

**ACCOUNTING FOR PLANT ASSETS AND DEPPRECIATION**

Buildings, machinery, equipment, furniture, fixtures, computers, outdoor lighting, parking lots, cars, and trucks are examples of assets that will last for more than one year, but will not last indefinitely. During each accounting period (year, quarter, month, etc.) a portion of the cost of these assets is being used up. The portion being used up is reported as Depreciation Expense on the [**income statement**](http://www.accountingcoach.com/terms/I/income-statement.html). In effect depreciation is the transfer of a portion of the asset's cost from the [**balance sheet**](http://www.accountingcoach.com/terms/B/balance-sheet.html) to the income statement during each year of the asset's life.

The calculation and reporting of depreciation is based upon two accounting principles:

1. [**Cost principle**](http://www.accountingcoach.com/terms/C/cost-principle.html). This principle requires that the Depreciation Expense reported on the income statement, and the asset amount that is reported on the balance sheet, should be based on the historical (original) cost of the asset. (The amounts should not be based on the cost to replace the asset, or on the current market value of the asset, etc.)
2. [**Matching principle**](http://www.accountingcoach.com/terms/M/matching-principle.html). This principle requires that the asset's cost be [**allocated**](http://www.accountingcoach.com/terms/A/allocated.html) to Depreciation Expense over the life of the asset. In effect the cost of the asset is divided up with some of the cost being reported on each of the income statements issued during the life of the asset. By assigning a portion of the asset's cost to various income statements, the accountant is matching a portion of the asset's cost with each period in which the asset is used. Hopefully this also means that the asset's cost is being matched with the [**revenues**](http://www.accountingcoach.com/terms/R/revenues.html) earned by using the asset.

There is several depreciation methods allowed for achieving the matching principle. The depreciation methods can be grouped into two categories: straight line depreciation and accelerated depreciation.

The assets mentioned above are often referred to as fixed assets, plant assets, depreciable assets, constructed assets, and property, plant and equipment. It is important to note that the asset [**land**](http://www.accountingcoach.com/terms/L/land.html) is not depreciated, because land is assumed to last indefinitely.

**Book vs Tax Depreciation**

Our discussion of depreciation is limited to the depreciation entered into the company's [**general ledger**](http://www.accountingcoach.com/terms/G/general-ledger.html) (or books) and reported on the company's financial statements. These amounts are based on [**accounting principles**](http://www.accountingcoach.com/terms/A/accounting-principles.html). The amounts resulting from the accounting principles are often different from the amounts based on the Revenue authority code and regulations. Hence the depreciation on the financial statements will likely be legitimately different from the depreciation on the company's tax returns.

**Book Depreciation Illustrated**

To illustrate depreciation used in the accounting records and on the financial statements, let's assume the following facts:

* On July 1, 2009 a company purchases equipment having a cost of Ksh.10,500. The company estimates that the equipment will have a useful life of 5 years. At the end of its useful life, the company expects to sell the equipment for Ksh.500. The company wants the depreciation to be reported evenly over the 5–year life.

**Calculation of Straight-line Depreciation**  
The most common method of depreciating assets for financial statement purposes (as opposed to the method used for income tax purposes) is the straight-line method. Under this depreciation method, the depreciation for each full year is the same amount.

The depreciation expense for a full year when computed under the straight-line method is illustrated here:

|  |  |  |
| --- | --- | --- |
| Cost of the asset |  | Ksh.14,000 |
| Less: Expected [**salvage value**](http://www.accountingcoach.com/terms/S/salvage-value-of-fixed-assets.html) |  | –     0 |
| [**Depreciable Cost**](http://www.accountingcoach.com/terms/D/depreciable-cost.html) (amount to be depreciated over the estimated useful life) |  | Ksh.14,000 |
| Years of estimated useful life |  | 7 |
| [**Depreciation Expense**](http://www.accountingcoach.com/terms/D/depreciation-expense.html) per year |  | **Ksh. 2,000** |

If a company's accounting year ends on December 31, the company will report the depreciation expense on the company's income statement as shown in the following depreciation schedule:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| **Depreciation Expense:** | Ksh.1,000 | Ksh.2,000 | Ksh.2,000 | Ksh.2,000 | Ksh.2,000 | Ksh.1,000 |

The actual cash paid by the company for this equipment will occur as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| **Cash Paid:** | Ksh.10,500 | Ksh. –0– | Ksh. –0– | Ksh. –0– | Ksh. –0– | Ksh. –0– |

As you can see, the company paid Ksh.10,500 in 2009, but the 2009 income statement reports Depreciation Expense of only Ksh.1,000. (Because the asset was acquired on July 1, 2009, only half of the annual depreciation expense amount is recorded in 2009 and 2014.) In each of the years 2010 through 2013 the company's income statements will report Ksh.2,000 of Depreciation Expense, thereby matching Ksh.2,000 of Depreciation Expense with the revenues earned in each of those years. However, the company will not pay out any cash for this expense during those years. The company's [**net income**](http://www.accountingcoach.com/terms/N/net-income.html) before income taxes will be reduced in each of the years 2010 through 2013 by Ksh.2,000—but the Cash account will not be reduced. This explains why Depreciation Expense is sometimes referred to as a noncash expense.

The depreciation for the financial statements is entered into the accounts via a [**general journal entry**](http://www.accountingcoach.com/terms/G/general-journal-entry.html). Assuming that the company prepares only annual financial statements the journal entries can be prepared as of the last day of each year:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Account Name** | | **Debit** | **Credit** |
|  | | | | |
| **December 31, 2009** | [**Depreciation Expense**](http://www.accountingcoach.com/terms/D/depreciation-expense.html) | | **1,000** |  |
|  |  | [**Accumulated Depreciation**](http://www.accountingcoach.com/terms/A/accumulated-depreciation.html) |  | **1,000** |
|  | | | | |
| **December 31, 2010** | **Depreciation Expense** | | **2,000** |  |
|  |  | **Accumulated Depreciation** |  | **2,000** |
|  | | | | |
| **December 31, 2011** | **Depreciation Expense** | | **2,000** |  |
|  |  | **Accumulated Depreciation** |  | **2,000** |
|  | | | | |
| **December 31, 2012** | **Depreciation Expense** | | **2,000** |  |
|  |  | **Accumulated Depreciation** |  | **2,000** |
|  | | | | |
| **December 31, 2013** | **Depreciation Expense** | | **2,000** |  |
|  |  | **Accumulated Depreciation** |  | **2,000** |
|  | | | | |
| **December 31, 2014** | **Depreciation Expense** | | **1,000** |  |
|  |  | **Accumulated Depreciation** |  | **1,000** |

If monthly financial statements were prepared, 1/12 of the annual amounts would be entered monthly.

Note that the account credited in the journal entries is not the asset account [**Equipment**](http://www.accountingcoach.com/terms/E/equipment.html). Instead, the credit is entered in the [**contra asset account**](http://www.accountingcoach.com/terms/C/contra-asset-account.html) Accumulated Depreciation. The use of this contra account will allow the asset Equipment to continue to report the equipment's cost, while also reporting in the account Accumulated Depreciation the amount that has been charged to Depreciation Expense since the asset was acquired. For example, as of December 31, 2010 the Equipment account will have a debit balance of Ksh.10,500. On the same day, the account Accumulated Depreciation will have a credit balance of Ksh.3, 000. In T-account form, it looks like this: (To illustrate)

The Ksh.10,500 debit balance in Equipment minus the Ksh.3,000 credit balance in Accumulated Depreciation equals Ksh.7,500. This [**net**](http://www.accountingcoach.com/terms/N/net.html) amount of Ksh. 7,500 is referred to as the [**book value**](http://www.accountingcoach.com/terms/B/book-value.html) or as the [**carrying value**](http://www.accountingcoach.com/terms/C/carrying-amount.html) of the equipment.

**USE OF ESTIMATES**

**Examples of Estimates**

The calculation of depreciation shown above included two estimates:

1. [**Salvage value**](http://www.accountingcoach.com/terms/S/salvage-value-of-fixed-assets.html). Salvage value is the estimated amount that a company will receive when it disposes of an asset at the end of the asset's useful life. Often the salvage value is estimated to be zero. However, we assumed Ksh.500 in order to demonstrate how an amount would be handled. Salvage value is also referred to as disposal value, scrap value, or residual value.
2. [**Useful life**](http://www.accountingcoach.com/terms/U/useful-life.html). The useful life of an asset is an estimate of how long the asset will be used (as opposed to how long the asset will last). For example, a graphic artist might purchase a computer in 2009 and expects to replace it in 2011 with a more advanced computer. Hence the graphic artist's computer will have an estimated *useful* life of 2 years. An accountant purchasing a similar computer in 2009 expects to use it until 2013. The accountant will use an estimated useful life of 4 years when computing depreciation. Both the graphic artist and the accountant are correct—the graphic artist in using 2 years and the accountant in using 4 years—even if the computers will be in working order for many years after their useful lives end.

**Changes in Estimates**

Whenever estimates are used in accounting, it is possible they will change as time moves forward. For example, a company bought a machine for Ksh.14, 000 on January 1, 2005. At the time it was estimated to have no salvage value at the end of its useful life estimated to be 7 years. The company used straight-line depreciation. In 2009 the company realizes that technology will cause the machine to be obsolete by December 31, 2010 and there will be no salvage value at that time. Instead of the original useful life of 7 years, the company now estimates a total useful life of only 6 years (January 1, 2005 through December 31, 2010). This change in the estimated useful life affects only the current and future years. In other words, in this example the depreciation for 2009 and 2010 will be affected. The depreciation already reported for the years 2005, 2006, 2007, and 2008 cannot be changed. Any amount not depreciated as of December 31, 2008 will have to be depreciated over the years 2009 and 2010.

Summary

Straight-Line Method of Depreciation

The straight-line depreciation method is the simplest depreciation method. It assumes that an asset’s cost should be assigned equally to all periods benefited. The formula for calculating annual straight-line depreciation is:

= Annual Deppreciation Expense

With this formula, the annual depreciation expense for a van with an estimated useful life and salvage value of 4 years and Ksh. 2000 respectively, and that had an initial cost of Ksh. 24,000 is calculated as:

= Ksh. 5,500.00

When the depreciation expense for an asset has been calculated, a schedule showing the annual depreciation expense, the total accumulated depreciation, and the asset s book value (undepreciated cost) for each year can be prepared.

Please do this using the schedule below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| YEAR | Beginning book value | Depreciation expense for year | Accumulated Depreciation | Net book value as at the end of year |
| 1 | 24,000.00 |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

**Accelerated Depreciation**

**What Is It?**

Accelerated depreciation is an alternative to the [**straight-line depreciation**](http://www.accountingcoach.com/terms/S/straight-line-method-of-depreciation.html) method. Compared to the straight-line method, accelerated depreciation methods provide for more depreciation in the early years of an asset's life but then less depreciation in the later years. Under any depreciation method, the maximum depreciation during the life of an asset is limited to the cost of the asset. The difference in depreciation methods involves *when* you will report the depreciation. It's a matter of *timing*. Again, the *total* depreciation during the life of the asset is the same regardless of the depreciation method used.

As stated earlier, most companies use the straight-line method of depreciation for their financial statements. It is easy to compute and to understand. With straight-line depreciation the company will have the same amount of depreciation in each of the years of the asset's life. Accelerated depreciation will mean larger Depreciation Expense in the early years of the asset's life and then smaller Depreciation Expense in the later years. This larger expense in the earlier years will mean the company will report less profits in the earlier years of an asset's life (and greater profits in later years). Generally this is not appealing to most companies. As a result most companies will opt for the straight-line depreciation for their financial statements.

However, using an accelerated depreciation method on the company's income tax returns is very appealing. Higher depreciation in the early years of the asset means immediate income tax savings. Smaller depreciation in later years is far into the future. Generally, it is better to take the income tax savings sooner rather than later.

Fortunately a company is permitted to use straight-line depreciation on its financial statements and at the same time it can use accelerated depreciation on its income tax returns.

**Various Accelerated Depreciation Methods**

There are various methods of accelerated depreciation. Here are some of them:

* Sum-of-the-years' digits

(Refer to class example)

* The reducing balance method.
* (Refer to class example)
* **Reasons for Using Accelerated Depreciation.**
* Accelerated depreciation methods are used for two primary reasons. In some cases, an asset is more useful earlier in its life than later, and the useful life may be difficult to estimate. For example, computer equipment becomes obsolete quickly. Accordingly, a company may accelerate the depreciation of computer equipment to ensure that most of the cost has been depreciated when the equipment is replaced.
* A second, and more common, reason for using accelerated depreciation is for tax purposes (mentioned earlier). Depreciation expense (in the form of capital allowances) is deductible in computing taxable income and income taxes.

**Units-of-production depreciation**

Apart from the straight line and accelerated depreciation methods, the units of production method can also be used. This method produces a level amount of depreciation expense per unit of output (rather than per fiscal period).

**Book and Market Value of Plant Assets.**

The book value of plant assets is the cost of the assets less accumulated depreciation. This amount is not an indication of the market value of the assets, which may be much higher than the book value in some cases. For example, land and buildings purchased by a company often increase in value over time because of inflation, increased demand for property, and increased construction costs. This difference between the market and book value of assets is an unrecorded asset. The market value of a company’s stock is likely to include investors’ estimates of the value of this unrecorded asset.

**What is the entry to remove equipment that is sold before it is fully depreciated?**

**Disposal of assets**

When equipment that is used in a business is sold for cash before it is fully depreciated, there will be *two* journal entries:

The *first entry* will be a debit to Depreciation Expense and a credit to Accumulated Depreciation to record the depreciation right up to the date of the sale (disposal).

The *second entry* will consist of the following:

1. Credit the account Equipment to remove the equipment’s cost. You will debit the disposal account.

2. Debit Accumulated Depreciation to remove the equipment’s up-to-date accumulated depreciation. You will credit the disposal account.

3. Debit Cash/ bank for the amount received. You will credit the disposal account.

4. Get the disposal account to balance. If a debit amount is needed, it is a loss on the disposal. If a credit amount is needed, it is a gain on the disposal.