Fixed Asset Deprecation Calculation

**Depreciation Methods**

The total amount to be depreciated over the life of a fixed asset is determined by the following calculation:

**Cost of the fixed asset less residual value**

The period over which to depreciate a fixed asset is known as the**"useful economic life"** of the asset

So how much of this depreciable amount is charged against profits in each accounting period?

A depreciation method is required to allocate, in a systematic way, the total amount to be depreciated between each accounting period of the asset's useful economic life.

There are various methods of depreciation available. However, most businesses appear to adopt one of the two methods described below.

**Method 1 - Straight-line depreciation**

The straight-line method of depreciation is widely used and simple to calculate. It is based on the principle that each accounting period of the asset's life should bear an **equal amount of depreciation**.

As a result, the depreciation charge for the asset can be calculated using the following formula:

**Dpn = (C- R)/ N**

where:

Dpn = Annual straight-line depreciation charge

C = Cost of the asset  
R = Residual value of the asset  
N = Useful economic life of the asset (years)

Whilst it is simple and popular, Is the straight line depreciation method the most appropriate way of calculating depreciation?

The answer lies in understanding that depreciation is a process of allocation, not valuation.

The pattern of annual depreciation charges for a fixed asset should attempt to match the pattern of benefits derived from that asset. Therefore, where the benefits from an asset are likely to be reasonably constant over its life the straight-line method of depreciation would be appropriate as it results in a constant annual depreciation charge.

In practice it may be difficult to assess the pattern of benefits relating to an asset. In such cases the straight-line method may often be chosen simply because it is easy to understand and calculate.

**Method 2 - Reducing balance method**

The reducing balance method of depreciation provides a high annual depreciation charge in the early years of an asset's life but the annual depreciation charge reduces progressively as the asset ages.

To achieve this pattern of depreciation, a **fixed annual depreciation percentage**is applied to the **written-down value** of the asset. Thus, depreciation is calculated as a percentage of the reducing balance.

For certain fixed assets, the benefits derived may be high in the early years, but may decline as the asset ages. For such assets, the reducing-balance method of depreciation would be appropriate insofar as it matches the depreciation expense with the pattern of benefits.

Once a particular method of depreciation has been chosen for a fixed asset, the method should be applied consistently over its life. It is only permissible to switch from one method to another if the new method provides a fairer presentation of the financial results and financial position.

**Total depreciation charged**

It should be noted that, whichever method of depreciation is selected, the total depreciation to be charged over the useful life of a fixed asset will be the same.

It is simply the allocation of the total depreciation charge between accounting periods that is affected by the choice of method.

**Examples:**

**Depreciation - straight line example**

**Introduction**

In our introduction to the methods available to calculate depreciation, we suggested that there are two main methods that can be used:

- Straight- line depreciation

- Reducing balance method

We emphasised the point that these two methods simply provide an alternative way of allocating the total depreciation charge over several accounting periods. The total depreciation charge using either method will be the same over the total useful economic life of the asset.

To illustrate the straight line depreciation method, we have calculated the depreciation charge for the following asset:

**Data**

A business purchases a new machine for £75,000 on 1 January 2003. It is estimated that the machine will have a residual value of £10,000 and a useful economic life of five years. The business has an accounting year end of 31 December.

**Straight line depreciation method**

Using the straight line depreciation method, the calculation of the annual depreciation charge is as follows:

**Dpn = (C- R)/ N**

where:

Dpn = Annual straight-line depreciation charge

C = Cost of the asset  
R = Residual value of the asset  
N = Useful economic life of the asset (years)

So the calculation is:

Dpn = (£75,000 - £10,000) / 5

Dpn = £13,000

in the accounts of the business a depreciation charge of £13,000 will be expensed in the profit and loss account for each of the five years of the asset's useful economic life.

In the annual balance sheet, the machine would be shown at its original cost less the total accumulated depreciation for the asset to date.

**Example of how this would be disclosed in the accounts**

At the end of the third year of ownership of the machine, the financial accounts of the business would include the following items in relation to the machine:

***In the Profit and Loss Account:***

Depreciation of Machinery - Charge: £13,000

***In the Balance Sheet at 31 December 2005:***

|  |  |  |
| --- | --- | --- |
|  | £ | £ |
| Machine at Cost | 75,000 |  |
| less: Accumulated Depreciation | 39,000 |  |
| Machine at net book value |  | 36,000 |

The figure for accumulated depreciation of £39,000 at 31 December 2005 represents three years' worth of depreciation at £13,000 per year.

The cost of the machine (£75,000) less the accumulated depreciation charged on the machine (£39,000) is known as the "written-down value" ("WDV") or "net book value" ("NBV").

it should be noted that WDV or NBV is simply an accounting value that is the result of a decision about which method is used to calculate depreciation. It does not necessarily mean that the machine is actually worth more or less than the WDV or NBV.

**Depreciation - reducing balance example**

**Introduction**

In our introduction to the methods available to calculate depreciation, we suggested that there are two main methods that can be used:

- Straight- line depreciation

- Reducing balance method

We emphasised the point that these two methods simply provide an alternative way of allocating the total depreciation charge over several accounting periods. The total depreciation charge using either method will be the same over the total useful economic life of the asset.

To illustrate the reducing balance depreciation method, we have calculated the depreciation charge for the following asset:

**Data**

A business purchases a new machine for £75,000 on 1 January 2003. It is estimated that the machine will have a residual value of £10,000 and a useful economic life of five years. The business decides to calculate annual depreciation at the rate of 40% of the written-down value. The business has an accounting year end of 31 December.

**Reducing balance depreciation method**

Using the straight line depreciation method, the calculation of the annual depreciation charge is as follows:

|  |  |  |
| --- | --- | --- |
| 31 December |  | £ |
|  | Original machine cost | 75,000 |
| 2003 | Depreciation in 2003 (40% cost) | 30,000 |
|  | Written down value at 31 December 2003 | 45,000 |
|  |  |  |
| 2004 | Depreciation in 2004 (40% of WDV @ 31 December 2003) | 18,000 |
|  | Written down value at 31 December 2004 | 27,000 |
|  |  |  |
| 2005 | Depreciation in 2005 (40% of WDV @ 31 December 2004) | 10,800 |
|  | Written down value at 31 December 2005 | 16,200 |
|  |  |  |
| 2006 | Depreciation in 2006 (40% of WDV @ 31 December 2005) | 6,480 |
|  | Written down value at 31 December 2006 | 9,720 |
|  |  |  |
| 2007 | Depreciation in 2007 (40% of WDV @ 31 December 2006) | 3,888 |
|  | Written down value at 31 December 2007 | 5,832 |

The reducing balance method can result in significant differences in the annual depreciation charge, depending on the "percentage" of written-down value that is used to calculate the charge.

In the example above, the total amount charged to depreciation in the first three years of owning the machine (2003-2005) was £58,800 (compared with £39,000 if a straight line depreciation method has been used).