3.4 Final accounts

Depreciation (HL)

Over time, as a business produces its output, the non-current assets (fixed assets) of the business will lose value or depreciate. For example, the value of a peanut packaging machine, or the value of computers used in an office, will be different five years after the equipment was purchased. This depreciation is often due to use and damage that occurs over time, which is called ‘wear and tear’. Depreciation can also occur because the equipment is not up to the latest standards.

Figure 1. Depreciation refers to assets that lose their value.

Credit: cogal, Getty Images

Businesses account for the depreciation of these assets in their final accounts. This depreciation figure is recorded on the statement of profit or loss as an expense. This same figure is also used to depreciate or reduce the value of non-current assets in the statement of financial position (balance sheet). This section looks at two methods for calculating depreciation, and the appropriateness of each method in certain circumstances.

Causes of depreciation of non-current (fixed) assets

There are a number of reasons why a non-current asset (fixed asset) can decrease in value over time.

Wear and tear

Factories and equipment are used in production, and working parts will deteriorate or be damaged over time. This damage and deterioration is called wear and tear. This is perhaps the most common cause of depreciation.

Figure 2. Depreciation is the loss in the value of a fixed asset over time.

Credit: sorendls, Getty Images

Obsolescence

Obsolescence occurs when the technology used in the asset has been surpassed by more recent innovations. Over time, machinery will be replaced by new and more efficient machines. For example, the widespread use of computer technology in production has meant that equipment purchased even a few years ago rapidly becomes obsolete.

Calculating depreciation

Straight-line method of depreciation

The straight-line method of depreciation is used to calculate the fall in value of an asset evenly over its useful life. This method uses the formula:

$$\textbf{Annual depreciation} = \frac{\textbf{purchase price} - \textbf{residual value}}{\textbf{estimated useful life}}$$

For example, Chinon Africa Investments Ltd buys a delivery truck for transporting fresh fruit and vegetables to all its supermarket franchise outlets at a cost of $100 000. The truck has an estimated residual or scrap resale value (at the end of its life) of $25 000 and an estimated useful life of five years. Calculate the annual provision for depreciation.

$$\text{Annual provision for depreciation} = \frac{\$100\,000 - \$25\,000}{5 \text{ years}} = \$15\,000$$

The fall in value of the truck over the years can be illustrated by a straight line on the graph when the depreciation figure is graphed against the number of years. This gives the method its name: straight-line depreciation. This is illustrated in **Table 1** and **Figure 3**.

Table 1. Straight-line depreciation for delivery truck.

Year	Depreciation ($)	Value of the asset ($)
0	--	100000
1	15000	85000
2	15000	70000
3	15000	55000
4	15000	40000

Year	Depreciation ($)	Value of the asset ($)
5	15 000	25 000

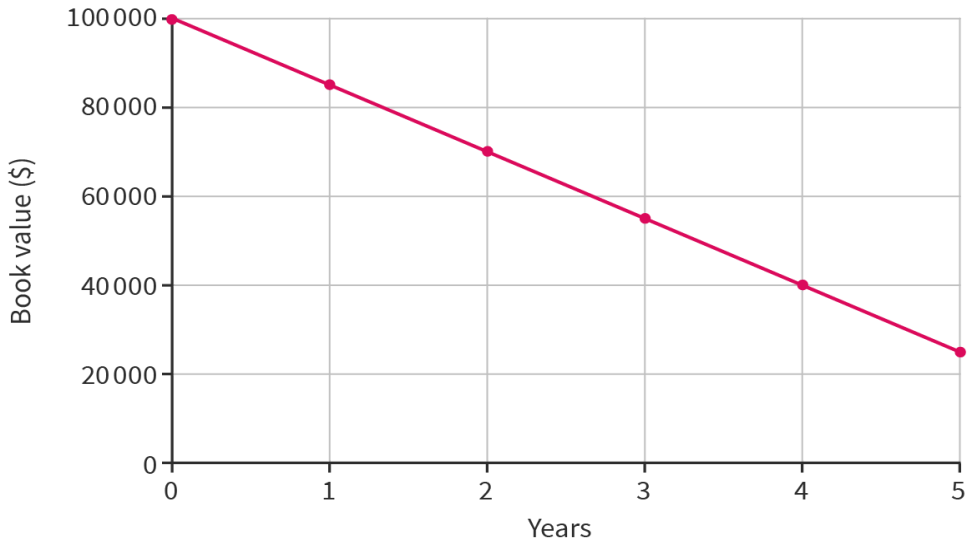

Figure 3. Straight-line depreciation for the delivery truck.

Activity

Learner profile: Knowledgeable
Approaches to learning: Thinking skills (transfer)

A university decides to purchase studio and video equipment to produce educational videos for its online courses. The cost of the equipment is $2 500 000. The studio and video equipment are expected to serve for five years. After five years, the university plans to sell the equipment, and to replace it with more modern equipment. The scrap value of the equipment is approximately $500 000.

1. Determine the annual depreciation of the equipment using the straight-line method.
2. Construct the depreciation table and graph the depreciating value of the equipment over time.

Units of production method

The units of production method of depreciation is a method of calculating the loss in value of an asset by estimating the units produced annually.

To determine the annual depreciation, the business must create a production plan. This plan will outline the estimated production output per year during the time period that the asset will be used.

$$\text{Annual depreciation} = \frac{\text{yearly units of production}}{\text{total estimated lifetime production}} \times (\text{original value of asset} - \text{residual value})$$

For example, Company A acquires machinery on 1 January 2022 for $20 000. Company A creates a production plan for four years that shows total lifetime production of 8000 units, and at that point the residual value will be $0. Company A's production plan is shown in **Table 3** and the annual depreciation of the value of the asset is shown in **Table 4**.

Table 3. Company A's production plan.

Year	Number of units
1	1000
2	2000
3	2000
4	3000
Total	**8000**

Table 4. Annual depreciation and value of the asset.

Year	Calculation	Depreciation ($) (Recorded as expense in statement of profit or loss)	Value of asset ($) (Recorded in non-current assets in statement of financial position)
0			20000
1	(1000 ÷ 8000) x ($20000 – $0)	2500	17500
2	(2000 ÷ 8000) x ($20000 – $0)	5000	12500
3	(2000 ÷ 8000) x ($20000 – $0)	5000	7500
4	(3000 ÷ 8000) x ($20000 – $0)	7500	0

Activity

Learner profile: Knowledgeable
Approaches to learning: Thinking skills (transfer)

A hospital purchases tomographic equipment at $850000. The equipment has an estimated useful life of 140000 pictures. The machine is predicted to operate in the following way:

- Year 1: 35000 pictures
- Year 2: 30000 pictures
- Year 3: 25000 pictures
- Year 4: 20000 pictures
- Year 5: 15000 pictures
- Year 6: 10000 pictures
- Year 7: 5000 pictures

After seven years the equipment can be sold at 5% of the purchase price.

- Create a table to record the annual depreciation from year 1 to year 7 considering the residual value.

Appropriateness of each depreciation method

Table 5 shows the main advantages and disadvantages of each of the two methods.

Table 5. Advantages and disadvantages of each depreciation method.

Depreciation method	Advantages	Disadvantages
Straight-line method	Easy to calculate and apply; comparisons over time are possible. The complete value of the asset is accounted for in the scrap value, so the full value is accounted for.	Assumes that the asset is used evenly throughout its life, which is not the case for most assets. The useful life of some assets cannot be predicted and the scrap value is an estimate, so the depreciation figures are not completely accurate.
Units of production method	More realistic for many types of assets; provides a more accurate picture of the loss of value due to wear and tear.	More complex to calculate.

The straight-line depreciation method is best used for assets that operate in a consistent way throughout the life of the asset and have a predictable life span. It is also suitable for less expensive items, such as furniture, and for small businesses that value accounting simplicity. Finally, it can be used for assets that may not become obsolete over their lifespan.

The units of production method is best used for assets that may see varied levels of use over time. Also, more appropriate for more expensive assets, where having an accurate value for depreciation is very important for accounting purposes and product pricing decisions.