Chapter 8

Non-current (fixed) assets

REAL WORLD CASE

New stores

During the period we opened ten stores adding 37,000 square feet of net retail space. Two stores were relocated. At the period end, total selling space was 562,000 square feet (2004: 525,000 square feet), of which 33,750 square feet opened in the 26 weeks to 29 January 2005. Ottakar's traded from 131 stores at the period end. Of these, 38 stores covering 280,000 square feet are in our Lifestyle format which includes a coffee shop, and comprises some 50% of our total selling space – a net increase of three stores (2004: 35 stores covering 260,700 square feet).

Former Hammicks stores

In April 2003 we acquired 24 stores from Hammicks Bookshops Limited. We have now traded for a full year from these stores and we are pleased with their progress. Sales and gross margins are growing to an expected level as buying practices and product sales mix become integrated with the rest of the business.

Current strategy

At the period end, Ottakar's traded from 131 branches nationwide and is the UK's second largest specialist chain behind Waterstone's. The book market is undergoing considerable change with the expansion of specialist chains such as Ottakar's and established penetration by the supermarkets and the Internet. The market is valued at some £2.5bn (source: Book Marketing Limited) and Ottakar's believes it has an 8% share of this market. The market is growing at an annualised rate of 3 to 5% (source: Book Marketing Limited) spurred on by a new level of consumer interest in books galvanised by film and other media. Over the years Ottakar's will continue to pursue its PRISM strategy comprising physical expansion, range development, innovation, staff welfare and margin growth.

Consolidated balance sheet

	Note	**29 January 2005** **£000**	31 January 2004 Restated £000
Fixed assets			
Intangible assets	10	**674**	722
Tangible assets	11	**33,882**	30,552

Notes to the financial statements

	Freehold Land and Buildings £000	Short Leasehold Land and Buildings £000	Fixtures and Fittings £000	Office Equipment £000	Motor Vehicles £000	Total £000
Net book value						
At 29 January 2005	**–**	**4,832**	**23,310**	**5,733**	**7**	**33,882**
At 31 January 2004	367	5,178	19,741	5,262	4	30,552

Source: Ottakar's Annual Report 2005, pp. 5, 8, 25, 34.

Discussion point

1 Why is it important for the company to give descriptive information about the investment in fixed assets?

2 What is the largest fixed asset category by net book value?

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Learning outcomes

After studying this chapter you should be able to:

- Define a non-current (fixed) asset and apply the definition.
- Explain the recognition conditions that are applied to tangible non-current (fixed) assets, intangible non-current (fixed) assets and non-current (fixed) asset investments.
- Explain users' needs for information about non-current (fixed) assets.
- Describe and explain the non-current (fixed) asset information provided in annual reports of companies.
- Evaluate the usefulness of published information about non-current (fixed) assets.
- Explain the nature of depreciation.
- Calculate depreciation, record the effect on the accounting equation and report the result in financial statements.

Additionally, for those who choose to study the Supplement:

- Record non-current (fixed) assets and depreciation in ledger accounts.

8.1 Introduction

If you have progressed through Chapters 1 to 7 you are now familiar with the accounting equation and the analysis of transactions or events using that equation. You know what is meant by the terms asset, liability, revenue, expense and ownership interest. You are aware of the structure of the primary financial statements and the way in which they seek to provide information which is relevant and reliable.

This chapter starts a new phase of the text which will help you to develop a critical awareness of some of the component items in the financial statements. Chapters 8 to 12 progress through the main sections of the balance sheet. Inevitably, they also cover relevant aspects of the income statement (profit and loss account) and the cash flow statement because transactions involving the balance sheet will sometimes have an effect in the other financial statements.

It is important at this stage not to become so enthusiastic for the intricacies of accounting procedures as to lose sight of the importance of user needs, which were set out in Chapter 1. That chapter set out, in section 1.2, the structure of most conceptual frameworks, which provides a sequence for each of Chapters 8 to 12, as follows:

- What are the principles for defining and recognising these items?
- What are the information needs of users in respect of the particular items?
- What information is currently provided by companies to meet these needs?
- Does the information show the desirable qualitative characteristics of financial statements?
- What are the principles for measuring, and processes for recording, these items?

That analysis is applied to non-current (fixed) assets in this chapter.

8.2 Definitions

The following definition of an asset was provided in Chapter 2.

Definition

An **asset** is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow.[1]

The following definitions explain the nature of tangible and non-tangible non-current assets. The word 'tangible' means 'able to be touched'. So 'intangible' means 'not able to be touched'.

Definitions

A **non-current asset** is any asset that does not meet the definition of a current asset.[2] Non-current assets include tangible, intangible and financial assets of a long-term nature. These are also described as **fixed assets**.[3]

Tangible non-current (fixed) assets are assets that have physical substance and are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes on a continuing basis in the reporting entity's activities.[4]

An **intangible asset** is an identifiable non-monetary asset without physical substance.[5]

These definitions are taken from different sources because the definitions have been developed and discussed at different times for different purposes. The IASB and the UK ASB have both spent many years in discussion over the subjects of accounting for tangible and intangible non-current assets because these are complex matters.

8.2.1 Examples of non-current (fixed) assets

The following is a sample of the non-current (fixed) assets found in company balance sheets.

Tangible non-current (fixed) assets

- Land and buildings owned by the entity
- Buildings leased by the entity
- Plant and equipment (owned or leased)
- Vehicles (owned or leased)
- Office equipment
- Assets under construction
- Telecommunications network
- Airport runways
- Water pipes and sewers
- Oil and mineral reserves.

Intangible non-current (fixed) assets

- Newspaper titles and publishing rights
- Patents
- Trade marks
- Goodwill purchased
- Brand names purchased.

Investments

- Long-term investments in subsidiary companies
- Long-term investments in other companies.

That sample was taken from only 10 annual reports of leading companies. Looking at more companies would soon extend the list considerably. The potential variety and the likelihood of encountering something new is one reason why definitions are essential.

8.2.2 Cost of a non-current (fixed) asset

There is one issue which is not as straightforward as it seems. That is the question of measuring the cost of a non-current (fixed) asset. When a toffee manufacturer buys a new toffee-shaping machine, the purchase price will be known from the supplier's invoice and the manufacturer's catalogue, but should the costs of delivery and installation be added to the amount recorded as the asset cost? When an insurance company buys a new head office, the purchase price will be shown in the contract, but should the legal costs be added to the amount recorded as the asset cost? When a new head office building is under development and interest is being paid on the funds borrowed to finance the development, should the interest paid on the borrowed funds be added to the cost of the development as part of the asset value?

The answer in all three cases is 'yes', although the third example causes greatest discussion and debate. The general principle is that the cost of a non-current (fixed) asset is the purchase price or the amount spent on its production together with any other expenditure incurred in bringing the non-current (fixed) asset to working condition for its intended use at its intended location.

Definition

The **cost** of a non-current (fixed) asset is the purchase price or the amount spent on its production together with any costs directly attributable to bringing the non-current (fixed) asset to working condition for its intended use at its intended location.

8.2.3 Repairs and improvements

There are sometimes problems in deciding whether a payment for a repair to a non-current (fixed) asset should be treated as an expense of the business or an asset. The key lies in the words of the definition of an asset and the phrase *future economic benefits*. If the payment relates to some act which merely preserves the existing life of the asset and the existing expectations of benefit from the asset, then the payment is treated as a repair and reported as an **expense**. The asset of cash decreases and there is a decrease in the ownership interest caused by the expense.

If the payment relates to some act which significantly extends the useful life of the asset, or increases the future economic benefit expected from the asset, then the payment is treated as an **improvement** and reported as an asset. It may be reported as a separate asset but, more usually, the amount will be added to the cost or value recorded for the asset which has been improved. The asset of cash decreases and is replaced by an asset of improvements. There is no effect on the ownership interest.

The following are examples of improvements and repairs.

Improvements

- Extensions to a building which increase the operating capacity of the business.
- A new roof which gives a building an extra ten years of life.
- A new engine for a delivery van which is more powerful than the existing engine and allows faster delivery in hilly districts.
- Renewing the fittings and interior decoration of a hotel to attract international visitors instead of the traditional local customers.

Repairs

- A new roof, required because of storm damage, which will keep the building weatherproof for the remainder of its estimated life.
- A new engine for a delivery van which replaces an existing damaged engine.
- Redecorating inside a building to preserve the existing standards of cleanliness and appearance.

Activity 8.1

Imagine you are the owner of a big hotel in the centre of town. Make a list of the items you would expect to include in your business balance sheet as non-current (fixed) assets. Make a list of the types of repair which would be classed as 'improvements'. Use the definition of a non-current (fixed) asset to show that your list includes items which are correctly classified.

8.3 Recognition

This section outlines the recognition issues faced in reporting non-current assets in the separate categories of tangible assets, intangible assets, and investment assets.

8.3.1 Tangible non-current (fixed) assets

Tangible non-current (fixed) assets are those items which can be touched, seen or heard and meet the conditions set out in the definition of a non-current (fixed) asset. **Recognition** by reporting in the balance sheet presents no problem where the future benefit can be identified and the cost of the asset can be measured. (Look back to section 2.5 for an explanation of recognition.) The evidence of cost is usually a purchase

invoice. Some tangible non-current (fixed) assets are recorded at a valuation made subsequent to the purchase. Revaluations are discussed in Chapter 12.

As the list in the previous section indicates, there is considerable variety in tangible non-current (fixed) assets. The common feature is that they all have a limited life expectancy. They may wear out, be used up, go out of fashion, break down or be sold for scrap. Whatever the reason, the effect is the same and is called **depreciation**. Users have many questions to ask about tangible non-current (fixed) assets, such as:

- What kinds of tangible fixed assets are in use?
- How old are they?
- How has the company measured the depreciation?
- Where is the depreciation recorded?

Answering those questions will take up most of the remainder of this chapter.

8.3.2 Intangible non-current (fixed) assets

An intangible non-current (fixed) asset is an item which meets the definition of a non-current (fixed) asset but has no physical substance. It cannot be touched, seen or heard. The evidence of its existence is the benefit flowing from it. For many years, items such as patents, trade marks and licences to manufacture products have been bought and sold between companies. The purchase has been recorded as a non-current (fixed) asset and depreciated over the estimated life of the patent, trade mark or licence. The estimated life is decided by law (for patents and trade marks) or by legal contract (for licences). The depreciation of intangible non-current (fixed) assets is usually referred to as **amortisation** (in which you may recognise the French word *mort* meaning *death*).

The intangible non-current (fixed) asset which has attracted most accounting-related comment in recent years has been the brand name of a company's product. When a company works over many years to develop the reputation of its product, that reputation creates an expected future benefit for the company and meets the definition of an **asset** as set out in Chapter 2. However, the generally held view is that it should not be recognised in the balance sheet because it fails the **recognition** test of Chapter 2. The conventional argument is that there is no measurable **cost** of the reputation gained by the brand name and the value cannot be measured with reliability.

That is the generally held view which was challenged in the mid-1980s by a number of leading companies. Some had bought other companies which had developed brand names. The new owners argued that they were buying the other company purely because of the quality of the brand name and they wanted to show that brand name in the new balance sheet. They had a reasonable argument because they had paid a price in the market and could show the cost of the brand name acquired. Other companies who had developed their own brand names did not want to be left behind and so paid expert valuers to calculate a value for their home-grown brands. A new professional specialism of brand valuation gained prominence and the experts claimed they could measure the value of a home-grown brand with reliability.

The companies which reported brand names in the balance sheet argued that the brand had a long life and did not require amortisation. This argument gave them the advantage of expanding the balance sheet without the disadvantage of amortisation appearing in the income statement (profit and loss account).

The IASB has issued a standard, IAS 38, covering accounting for intangible assets. Internally generated brand names must *not* be recognised as intangible assets. This rule applies to similar assets such as publishing titles, customer lists, or newspaper titles. Purchased brand names or trade marks or patents may be reported in a balance sheet if they meet the conditions for recognition. Recognition requires that it is probable that the expected economic benefit will flow to the entity, and the cost of the asset can be measured reliably.

If the intangible asset has a finite life it must be amortised over its useful life. The method of amortisation must reflect the pattern of use of the asset.

Activity 8.2

A company which has manufactured a well-known brand of brown bread for many years has decided that the brand name is so well known that it should appear in the balance sheet. Write down two arguments in favour of this, to be made by the company's finance director, and two arguments against, which will appear in a newspaper article.

8.3.3 Investments

Investments exist in many different forms but the essential feature is an ability to generate future economic benefits so that the wealth of the owner increases. This increase in wealth may arise because the value of the investment increases, or may arise because the investment creates income for the owner in the form of a distribution such as interest paid or dividends. Companies may hold investments for a variety of reasons. A non-current (fixed asset) investment is one which is held for long-term purposes, such as shares in another company which has close trading links with the investing company.

The number of shares held may be such as to give direct control of the investment or may be of a lesser amount which indicates a long-term relationship, without direct control, in a similar line of business.

Non-current (fixed) asset investments may be held so that resources are available to meet a long-term obligation, such as the payment of pensions. Such non-current (fixed) assets are normally found in the balance sheets of insurance companies or pension funds, rather than in the balance sheet of the company employing staff.

The features which make investments different as non-current (fixed) assets are the importance of the increase in value of the investment itself and the fact that they are not used in the production or service process. Both features require a different kind of accounting treatment from that given to other non-current (fixed) assets. Those special treatments are advanced accounting matters and will not be dealt with in any detail in this text. What you should look for in accounts is the existence of non-current (fixed) asset investments and the information provided about them. The questions users will ask are: 'How well is this investment keeping up its value?' and 'How important is the income from this investment to the overall profit of the company?'

8.4 Users' needs for information

Activity 8.3

Before you read this section, make a list of the information about non-current (fixed) assets which would be useful to you if you wished to learn more about a specific company. Then read the section and compare it with your list. How far-thinking are you in respect of accounting information?

Analysts who write reports for professional and private investors have a particular interest in the non-current (fixed) assets because these are the base from which profits are generated. They want to know what types of assets are held, how old they are and what plans the company has for future investment in non-current (fixed) assets.

The analysts also want to know about the impact of the depreciation charge on the profit of the year. They are aware that detailed aspects of calculations of depreciation may vary from one year to the next and this may affect the comparability of the profit amounts.

To estimate the remaining life of the assets, analysts compare the accumulated depreciation with the total cost (or value) of the non-current (fixed) assets. If the accumulated depreciation is relatively low, then the non-current (fixed) assets are relatively new. Other companies in the industry will be used for comparison. The analysts also compare the depreciation charge for the year with the total cost (or value) of the assets and expect to see a similar relationship from one year to the next. A sudden change will cause them to ask more questions about a change in the basis of calculation.

8.5 Information provided in the financial statements

In Chapter 7 the balance sheet of Safe and Sure plc was presented. The balance sheet showed a single line of information on tangible non-current (fixed) assets. This section shows how that single line becomes understandable when read in conjunction with the notes to the accounts, the statement of accounting policy and the finance director's review.

8.5.1 Balance sheet

	Notes	Year 7 £m	*Year 6* *£m*
Non-current assets			
Tangible assets	*2*	137.5	*121.9*

8.5.2 Notes to the balance sheet

In the notes to the balance sheet there is considerably more information:

Note 2 Tangible non-current assets

	Land and buildings £m	*Plant and equipment* £m	*Vehicles* £m	*Total* £m
Cost or valuation				
At 1 January Year 7	28.3	96.4	104.8	229.5
Additions at cost	3.9	18.5	37.8	60.2
On acquisitions	0.3	1.0	0.7	2.0
Disposals	(0.6)	(3.1)	(24.7)	(28.4)
At 31 December Year 7	31.9	112.8	118.6	263.3
Aggregate depreciation				
At 1 January Year 7	2.2	58.8	46.6	107.6
Depreciation for the year	0.5	13.5	19.2	33.2
On acquisitions	0.1	0.7	0.6	1.4
Disposals	(0.2)	(2.8)	(13.4)	(16.4)
At 31 December Year 7	2.6	70.2	53.0	125.8
Net book value at 31 December Year 7	29.3	42.6	65.6	137.5
Net book value at 31 December Year 6	26.1	37.6	58.2	121.9

Analysis of land and buildings at cost or valuation

	Year 7 £m	*Year 6* *£m*
At cost	10.4	*7.1*
At valuation	21.5	*21.2*
	31.9	*28.3*

The majority of the group's freehold and long-term leasehold properties were revalued during Year 5 by independent valuers. Valuations were made on the basis of the market value for existing use. The book

values of the properties were adjusted to the revaluations and the resultant net surplus was credited to the revaluation reserve.

Analysis of net book value of land and buildings

	Year 7	*Year 6*
	£m	*£m*
Freehold	24.5	*21.0*
Leasehold:		
Over 50 years unexpired	2.1	*2.4*
Under 50 years unexpired	2.7	*2.7*
	29.3	*26.1*

If the revalued assets were stated on the historical cost basis the amounts would be:

	Year 7	*Year 6*
	£m	*£m*
Land and buildings at cost	15.7	*14.5*
Aggregate depreciation	(2.2)	*(1.9)*
	13.5	*12.6*

It is clear from the extensive nature of note 2 to the balance sheet that tangible non-current (fixed) assets are regarded as important by those who regulate the information. All companies present a detailed note of this kind because the information is required by IAS 16, *Property, Plant and Equipment*.

8.5.3 Statement of accounting policy

In addition the company is required, by the accounting standard IAS 1, *Presentation of Financial Statements*, to disclose its significant accounting policies. For this company the wording of the accounting policy statement is as follows:

Freehold and leasehold property

Freehold and leasehold land and buildings are stated either at cost or at their revalued amounts less depreciation. Full revaluations are made at five-year intervals with interim valuations in the intervening years, the most recent being in Year 0.

Provision for depreciation of freehold land and buildings is made at the annual rate of 1% of cost or the revalued amounts. Leasehold land and buildings are amortised in equal annual instalments over the periods of the leases subject to a minimum annual provision of 1% of cost or the revalued amounts. When properties are sold the difference between sales proceeds and net book value is dealt with in the income statement (profit and loss account).

Other tangible non-current (fixed) assets

Other tangible non-current assets are stated at cost less depreciation. Provision for depreciation is made mainly in equal annual instalments over the estimated useful lives of the assets as follows:

4 to 5 years	*vehicles*
5 to 10 years	*plant, machinery and equipment*

8.5.4 Operating and financial review

There is also a comment in the finance director's report, as a contribution to the operating and financial review:

Capital expenditure

The major items of capital expenditure are vehicles, equipment used on customers' premises and office equipment, particularly computers. Disposals during the year were mainly of vehicles being replaced on a rolling programme.

Activity 8.4

Find the annual report of a company of your choice. This may be through access to the website, or by requesting a printed copy of the annual report through the website ***www.ft.com****, or by using the free annual reports offer on the London Stock Exchange page of the Financial Times.*

In the annual report find the information that corresponds to the extracts from Safe & Sure given in section 8.5. What are the similarities and differences? What do you learn about the non-current (fixed) asset base of your chosen company?

8.6 Usefulness of published information

Here is David Wilson to explain how useful he sees the information provided by companies about their tangible non-current (fixed) assets. If you look back to Chapter 4 you will see that he was about to visit the company and had made a preliminary list of questions. He has now made the visit and has a better understanding of what is reported in the balance sheet. He talks to Leona in a break at a workout session.

DAVID: *I told you that in making my review before visiting the company I looked closely at the type of tangible non-current (fixed) assets held and the estimated useful life. I also checked that the depreciation period and method of calculation had not changed from previous years.*

As I was making a site visit I took the opportunity to look at the various non-current (fixed) assets. This is a group of companies, expanding by acquisition of other companies, and each acquisition brings in more land and buildings. Some of these assets are recorded at valuation rather than original cost. The company has to review the valuation on a regular That is quite a common practice and I have confidence in the firm of valuers used.

Plant and equipment has an aggregate depreciation of £70.2m which is 62% of the cost of the assets at £112.8m. It seems to me that must be saying that the plant and equipment is more than half-way through its estimated life. The finance director wasn't too enthusiastic about this interpretation. He pointed out that when another company is acquired the non-current (fixed) assets may be quite old and have to be brought into the group balance sheet, but once they are in group control there is a strict policy of evaluation and replacement. He views the depreciation policy as being at the prudent end of the spectrum, so the realistic life remaining might be marginally over half, but discretion and the fast-moving nature of the industry requires an element of caution. He called in the plant manager who showed me the replacement schedules for plant and equipment for the next three years. It certainly reassured me that risk of obsolescence is probably not a serious worry. I also met the vehicle fleet supervisor who showed me similar replacement schedules for the vehicles.

I saw how the vehicle fleet is managed so that every vehicle is idle for the minimum time. Each vehicle is assigned to a group of cleaning operatives, whose shifts are scheduled so that the vehicle's use is maximised. Plant and equipment are the responsibility of area managers who have to look after security, maintenance and efficiency of usage. I thought it was all really quite impressive.

The depreciation charge for the plant and equipment in Year 7 is £13.5m which is 12% of the cost of £112.8m and suggests an estimated life of just over eight years is being applied. That is within the range of five to ten years stated as the company's accounting policy. I think the wording 'five to ten years' is too vague. Using five years would double the depreciation charge compared with ten. I tried to pin down the finance director so that I can get a good figure for my forecast but all he would say was that there is no reason to suppose there are any unusual features in the amount in the accounts. The depreciation charge for vehicles

is £19.2m which is 16% of the cost of £118.6m. That suggests an estimated life of just over six years is being applied. I asked the finance director how that squared with the accounting policy statement of estimated useful lives of four to five years for vehicles. He did seem to sigh a little at that point but was quite patient in explaining that there are some fully depreciated vehicles still in use (because they are quite prudent in their estimates of depreciation) and so the depreciation charge is not the 20% to 25% I was looking for. I'll need to think about that one but I might move my estimate for next year closer to 20%.

You asked me how this company's information measures up to the qualitative characteristics (set out in Chapter 4)*. Relevance I would rate highly, because there is plenty of information in the notes which I can use to ask questions about the effective use of non-current (fixed) assets and the impact on income statement (profit and loss account) through the depreciation charge. Reliability, faithful representation and neutrality are qualities I leave to the auditors. Prudence is something which seems to come out strongly in conversation with the finance director. The detailed schedule of assets which I saw suggests that completeness is not a problem. Comparability is fine because there are amounts for the previous year and the standard format allows me to make comparison with other companies in the industry. Understandability is perhaps more of a problem than I thought. Those fully depreciated assets caught me out.*

LEONA: *Well, I have now heard you admit that there is some value in having auditors. Shall I tell you how much you have missed? You could have asked more searching questions about the way in which they measure the cost of plant and equipment. Does it include delivery charges and installation costs? You could have asked whether a technical expert inside the company estimates and reviews the asset lives used, or whether the finance director makes a guess. Did you ask whether they are perhaps verging on being over-prudent so that surprises come later when the depreciation charge is less than expected? You could have asked how the interim valuations are carried out. These are all questions we ask as auditors so that you may treat the information as being reliable and a faithful representation.*

Hopefully you now have a feeling for the information provided by companies on tangible non-current (fixed) assets and how it is used by the professional investor. The nature and recording of depreciation is now explained.

8.7 Depreciation: an explanation of its nature

Activity 8.5

Before you read this section, write down what you think 'depreciation' means. Then read the section and compare it with your initial views. Depreciation is a very subjective matter and there are different views of its purpose, so your answer may be interesting even if it does not match the text. You should consult your lecturer, tutor or other expert in the area to understand why your perceptions may be different.

Definitions[6]

Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.

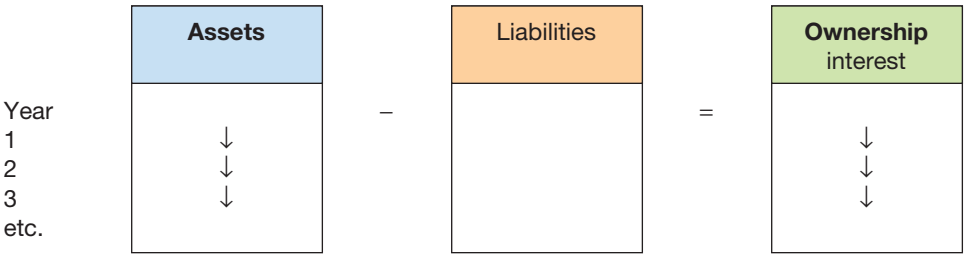
The **depreciable amount** is the cost of an asset, or other amount substituted for cost, less its residual value.

Residual value is the estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated cost of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

The asset may be an item of plant or equipment which is wearing out through being used. It may be a payment made by a company for the right to become a tenant of a property. That payment purchases a lease which reduces in value through the passage of time. The asset may be a computer system which becomes out of date in a very short space of time because of obsolescence. It may be a machine which produces goods for which demand falls because of changing market conditions.

The definition shows that depreciation is a device used in accounting to allocate (spread) the cost of a non-current (fixed) asset over its useful life. The process of spreading cost over more than one accounting period is called **allocation**.

In terms of the accounting equation, the useful life of the non-current (fixed) asset is being reduced and this will reduce the ownership interest.



As the asset becomes older, the depreciation of one year is added to the depreciation of previous years. This is called the **accumulated depreciation** or **aggregate depreciation**. The accumulated depreciation at the end of any year is equal to the accumulated depreciation at the start of the year plus the depreciation charge for that year.

Deducting the accumulated depreciation from the original cost leaves the **net book value**. The net book value could also be described as the cost remaining as a benefit for future years.

Showing the effect of depreciation by use of arrows and the accounting equation is relatively easy. Deciding on the amount of depreciation each year is much more difficult because there are so many different views of how to calculate the amount of asset used up in each period.

8.7.1 Calculation of depreciation

Calculation of depreciation requires three pieces of information:

1. the cost of the asset;
2. the estimated useful life; and
3. the estimated residual value.

The total depreciation of the non-current (fixed) asset is equal to the cost of the non-current (fixed) asset minus the estimated residual value. The purpose of the depreciation calculation is to spread the total depreciation over the estimated useful life.

The first point at which differences of opinion arise is in the estimation of the useful life and residual value. These are matters of judgement which vary from one person to the next.

Unfortunately the differences do not stop at those estimates. There is also no agreement on the arithmetical approach to spreading the total depreciation over the useful life. Some people are of the opinion that a non-current (fixed) asset is used evenly over time and that the depreciation should reflect the benefit gained from its use. Others argue that the non-current (fixed) asset declines in value most in the early years and so the depreciation charge should be greater in earlier years.

8.7.2 Straight-line method

Those who are of the opinion that a non-current (fixed) asset is used evenly over time apply a method of calculation called straight-line depreciation. The formula is:

$$\frac{\text{Cost} - \text{Expected residual value}}{\text{Expected life}}$$

To illustrate the use of the formula, take a non-current (fixed) asset which has a cost of £1,000 and an estimated life of five years. The estimated residual value is nil. The calculation of the annual depreciation charge is:

$$\frac{£1{,}000 - \text{nil}}{5} = £200 \text{ per annum}$$

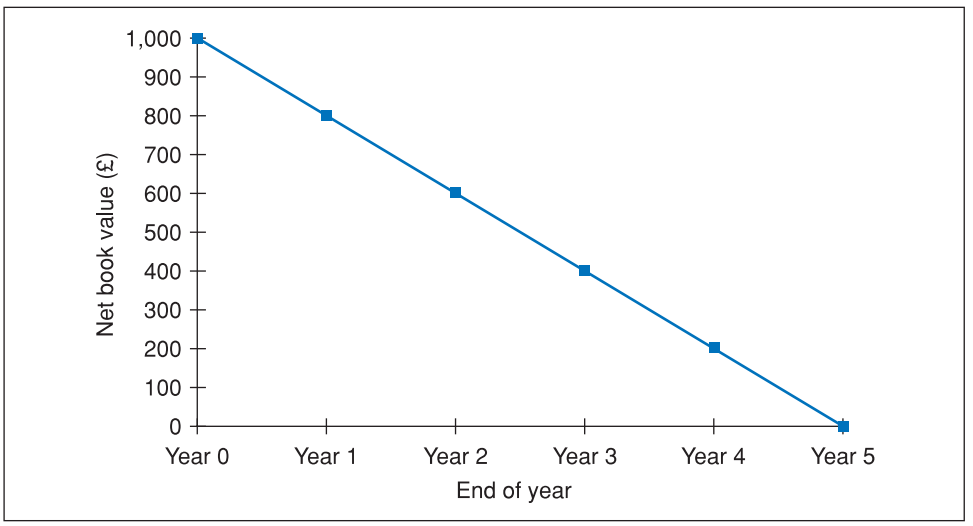
The depreciation rate is sometimes expressed as a percentage of the original cost. In this case the company would state its depreciation policy as follows:

Accounting policy:
Depreciation is charged on a straight-line basis at a rate of 20% of cost per annum.

Exhibit 8.1
Pattern of depreciation and net book value over the life of an asset

End of year	*Depreciation of the year (a)* £	*Total depreciation (b)* £	*Net book value of the asset (£1,000 – b)* £
1	200	200	800
2	200	400	600
3	200	600	400
4	200	800	200
5	200	1,000	nil

Exhibit 8.2
Graph of net book value over Years 1 to 5, for the straight-line method of depreciation



The phrase 'straight-line' is used because a graph of the net book value of the asset at the end of each year produces a straight line. Exhibit 8.1 sets out the five-year pattern of depreciation and net book value for the example used above.

Exhibit 8.2 shows a graph of the net book value at the end of each year. The graph starts at the cost figure of £1,000 when the asset is new (Year 0) and reduces by £200 each year until it is zero at the end of Year 5.

8.7.3 Reducing-balance method

Those who believe that the asset depreciates most in earlier years would calculate the depreciation using the formula:

Fixed percentage × *Net book value at the start of the year*

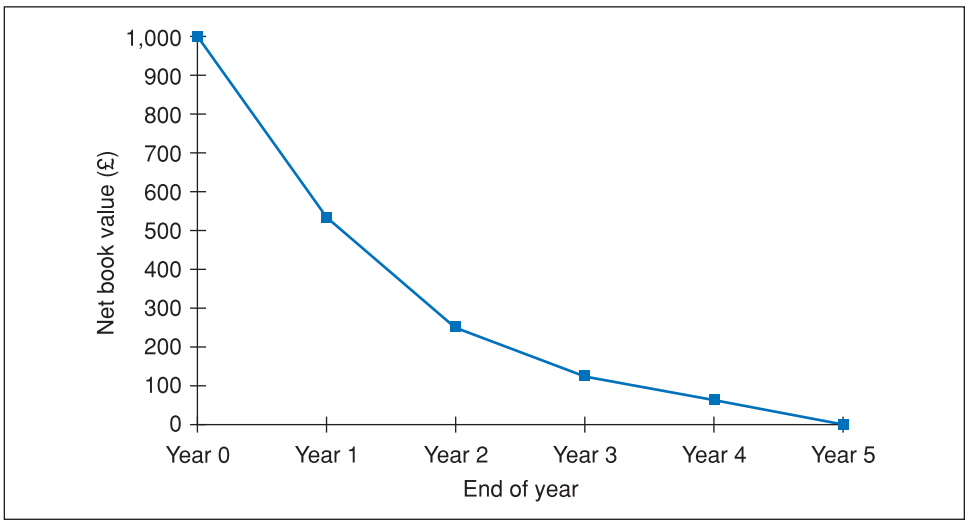
Take the example of the asset costing £1,000. The fixed percentage applied for the reducing-balance method might be as high as 50%. The calculations would be as shown in the table in Exhibit 8.3.

You will see from the table in Exhibit 8.3 that under the reducing-balance method there is always a small balance remaining. In this example, the rate of 50% is used to

Exhibit 8.3
Calculation of reducing-balance depreciation

Year	*Net book value at start of year (a)* £	*Annual depreciation (b) = 50% of (a)* £	*Net book value at end of year (a – b)* £
1	1,000	500	500
2	500	250	250
3	250	125	125
4	125	63	62
5	62	31	31

Exhibit 8.4
Graph of net book value over Years 1 to 5, for the reducing-balance method of depreciation



bring the net book value to a relatively small amount. The formula for calculating the exact rate requires a knowledge of compound interest and may be found at the end of the Supplement to this chapter. For those whose main interest is in understanding and interpreting accounts it is not necessary to know the formula, but it is useful to be aware that a very much higher percentage rate is required on the reducing-balance method as compared with the straight-line method. As a useful guide, the reducing-balance rate must be at least twice the rate of the straight-line calculation if the major part of the asset is to be depreciated over its useful life.

A graph of the net book value at the end of each year under the reducing-balance method is shown in Exhibit 8.4. The steep slope at the start shows that the net book value declines rapidly in the early part of the asset's life and then less steeply towards the end when most of the benefit of the asset has been used up.

8.7.4 Which method to choose?

The separate recording of asset at cost and accumulated depreciation is accounting information provided in many countries. The UK practice at a general level is consistent with the IASB standard. Country-specific factors may lead to differences in matters of detail such as the choice of depreciation method or the estimated life of non-current (fixed) assets. In some countries, the depreciation expense in the accounting income statement (profit and loss account) must match that used for the purposes of calculating taxable profit. This may encourage the use of the reducing-balance method, giving a higher expense (and so a lower profit) in the early years of the asset's life. In the UK there are separate rules in tax law for calculating depreciation, and so this has no effect on accounting profit.

The choice of depreciation method should be based on the expected pattern of usage of the asset. If the usage is evenly spread then the straight-line method is appropriate. If the usage is heaviest in early years then the reducing-balance method is the best representation of the economic activity. In practice, it is found that most UK companies use straight-line depreciation. In some other countries, particularly those where tax rules and accounting laws are closely linked, the reducing-balance method is commonly observed. So it appears that there are different international practices that may reflect different conditions in the respective countries. David and Leona discuss the problem.

DAVID: *The choice of depreciation method may have a significant impact on reported profit. Companies that are actively investing in non-current (fixed) assets will do so in the expectation of increased profits. However it may take some time for such profits to emerge. If, in the meantime, there is a relatively high charge to income statement (profit and loss account) through reducing-balance depreciation, profits may fall in the short term. In contrast the use of straight-line depreciation will have a less dramatic impact on reported profit immediately following the new investment, so the company avoids a dip in profits.*

LEONA: *I can't accept that as a valid argument to give to the auditor. I ask the company what the pattern of usage is. If the company tells me that the asset produces benefit evenly over its useful life, I can accept straight-line depreciation. If, on the other hand, I hear that the asset is more productive in its early years of life, I expect to see reducing-balance depreciation.*

DAVID: *Well let me try your social conscience. I came across a case of a UK company that had been taken over by a German parent company. The UK company had always used straight-line depreciation and was making small profits each year. The parent*

company had always used reducing-balance depreciation and so changed the accounting method of the UK subsidiary. Small profits turned into large losses and the parent company said that there would have to be a reduction in the workforce to cut costs. The employee representatives said that nothing had changed except that the accountants had redefined the game. They blamed the accountants for the resulting job losses and increased unemployment.

LEONA: *My role is confined to giving an opinion on the accounting information. If a particular accounting process is detrimental to the public interest then it is the job of government to legislate.*

Activity 8.6

Consider the discussion between David and Leona. Do you share the concern of the employee representatives as described by David? Do you agree with Leona that the economic impact of accounting information is not a problem for the auditor? What is your view on the social responsibility attached to financial reporting?

8.7.5 Retaining cash in the business

Suppose that the policy of the owner is to take all the available profits as drawings for personal use. Take a company that has fee income of £120,000 and pays wages and other costs of £58,000. If the company did not recognise the expense of depreciation the owner's drawings could be as high as £62,000. Suppose now that depreciation of non-current (fixed) assets is calculated as £10,000. The net profit after depreciation becomes £52,000. The owner can still see £62,000 in the bank account but knows £10,000 of that amount represents using up non-current (fixed) assets. Leaving the £10,000 in the bank will allow the business to save cash for asset replacement. The owner should withdraw no more than £52,000.

It is often said that depreciation limits the amount of profits available for cash drawings by the owner and encourages saving for asset replacement. However there is nothing to stop the business spending the £10,000 on some purpose other than replacement of non-current (fixed) assets. We can only say that cash withheld from shareholders *may* be used to replace assets at the end of the asset life.

8.8 Reporting non-current (fixed) assets and depreciation in financial statements

This section moves step by step through the recording process. First, it looks at a situation of straight-line depreciation with no residual value for the asset. Then it takes in the additional complication of an estimated residual value.

8.8.1 Straight-line depreciation, no residual value

When a retail company wants new premises, it must either buy a shop or rent one. Renting is referred to as **leasing**. When the rent agreement is signed, the tenant may pay an agreed price for the privilege of having the lease. This is called the initial payment for the lease. It is paid in addition to the annual rental payment. The initial payment to acquire the lease provides a benefit of occupation for the entire period of the lease and so is a non-current (fixed) asset. Because the lease has a known life, it must be depreciated.

On 1 January Year 2 Electrical Instruments purchased a three-year lease of a shop for a payment of £60,000. Using the straight-line method of depreciation the amount of depreciation each year will be calculated on a straight-line basis as £20,000 (one-third of the cost of the lease). The income statement (profit and loss account) will report this amount as an expense in each of the three years of the lease. The balance sheet will show on one line the original cost of £60,000 and, on a second line, the accumulated depreciation to be subtracted at the end of each year.

The financial statements over the period of three years will show the following information relating to this lease:

Income statement (profit and loss account) (extract)

Year ended 31 December	*Year 2*	*Year 3*	*Year 4*
	£000s	*£000s*	*£000s*
Depreciation expense	(20)	(20)	(20)

Balance sheet (extract)

At 31 December	*Year 2*	*Year 3*	*Year 4*
	£000s	*£000s*	*£000s*
Lease at cost	60	60	60
Less accumulated depreciation	20	40	60
Net book value	40	20	nil

8.8.2 Straight-line depreciation with a residual value

In the case of Electrical Instruments the lease had no residual value. Take now the example of The Removals Company which commences business on 1 January Year 2 by paying cash for a van costing £60,000. It is estimated to have a useful life of three years and is estimated to have a residual value of £6,000. On 31 December Year 2 the owner calculates annual depreciation of the van as £18,000, using the formula:

$$\frac{\textit{Cost} - \textit{Estimated residual value}}{\textit{Estimated life}}$$

During each year of operating the van, the company collected £120,000 in cash from customers and paid £58,000 in cash for drivers' wages, fuel and other running costs.

These transactions and events may be summarised using the accounting equation and a spreadsheet similar to that used in Chapter 5 (Exhibit 5.3). In Exhibit 8.5 there is a spreadsheet for the first year of the use of the van by the company. The assets section of the spreadsheet has three columns, one of which is for cash but two of which are for the van. The two columns for the van keep a separate record of the original cost and the accumulated depreciation. The original cost is the positive part of the asset but the accumulated depreciation is the negative part of the asset. Taking the accumulated depreciation from the original cost leaves the net book value. That is the amount of cost not yet amortised which acts as a measure of the benefit remaining in the asset for the future. In Exhibit 8.6 the information collected together by Exhibit 8.5 is presented in the form of a balance sheet and an income statement (profit and loss account).

Exhibit 8.5

Spreadsheet analysing transactions and events of The Removals Company into the elements of the accounting equation

	Transaction or event	*Assets*			*Ownership interest*	
		Van at cost	*Accumulated depreciation of van*	*Cash*	*Capital contributed or withdrawn*	*Profit = revenue minus (expenses)*
Year 2		£	£	£	£	£
1 Jan.	Owner contributes cash			60,000	60,000	
1 Jan.	Purchase furniture van	60,000		(60,000)		
All year	Collected cash from customers			120,000		120,000
All year	Paid for wages, fuel, etc.			(58,000)		(58,000)
31 Dec.	Calculate annual depreciation		(18,000)			(18,000)
	Totals	60,000	(18,000)	62,000	60,000	44,000
		104,000			104,000	

Exhibit 8.6

The Removals Company: Balance sheet at end of Year 2 and Income statement (profit and loss account) for Year 2

The Removals Company
Balance sheet at 31 December Year 2

	£
Non-current (fixed) assets	
Furniture van at cost	60,000
Accumulated depreciation	(18,000)
Net book value	42,000
Current assets	
Cash	62,000
Total assets	104,000
Ownership interest	
Ownership interest at the start of the year	nil
Capital contributed during the year	60,000
Profit of the year	44,000
	104,000

The Removals Company
Income statement (profit and loss account)
for the year ended 31 December Year 2

	£	£
Revenue		
Fees for removal work		120,000
Expenses		
Wages, fuel and other running costs	(58,000)	
Depreciation	(18,000)	
		(76,000)
Net profit		44,000

Exhibit 8.7

Spreadsheet analysis of transactions of The Removals Company, Year 3

	Transaction or event	*Assets*			*Ownership interest*		
		Van at cost	*Accumulated depreciation of van*	*Cash*	*Ownership interest at start of year*	*Capital contributed or withdrawn*	*Profit = revenue minus (expenses)*
Year 3		£	£	£	£	£	£
1 Jan.	Amounts brought forward at start of year	60,000	(18,000)	62,000	104,000		
All year	Collected cash from customers			120,000			120,000
All year	Paid for wages, fuel, etc.			(58,000)			(58,000)
31 Dec.	Calculate annual depreciation		(18,000)				(18,000)
	Totals	60,000	(36,000)	124,000	104,000		44,000
			148,000			148,000	

Exhibit 8.8

The Removals Company: Balance sheet at end of Year 3 and Income statement (profit and loss account) for Year 3

The Removals Company
Balance sheet at 31 December Year 3

	£
Non-current (fixed) assets	
Furniture van at cost	60,000
Accumulated depreciation	(36,000)
Net book value	24,000
Current assets	
Cash	124,000
Total assets	148,000
Ownership interest	
Ownership interest at the start of the year	104,000
Profit of the year	44,000
	148,000

The Removals Company
Income statement (profit and loss account)
for the year ended 31 December Year 3

	£	£
Revenue		
Fees for removal work		120,000
Expenses		
Wages, fuel and other running costs	(58,000)	
Depreciation	(18,000)	
		(76,000)
Net profit		44,000

8.8.3 Continuing to use the non-current (fixed) asset

So far, the accounting entries have related to the first year of the business so that there was no need to ask any questions about the position at the start of the period. To show the full impact of the progressive depreciation of the asset, the spreadsheet and financial statements are now presented for Year 3. Exhibit 8.7 sets out the spreadsheet and Exhibit 8.8 sets out the financial statements. It is assumed that for Year 3 the amounts of cash collected from customers and the amounts paid in cash for running costs are the same as for Year 2. No further capital is contributed by the owner and no new vans are acquired.

The first line of the spreadsheet in Exhibit 8.7 shows the position at the start of the year. The asset columns show the amounts as they were at the end of the previous year. The ownership interest shows the amount resulting at the end of the previous year, as seen in the Year 2 balance sheet. The columns for revenue and expenses are empty at the start of the year, awaiting the transactions and events of Year 3.

8.8.4 Disposing of the non-current (fixed) asset

During Year 4 the amounts of cash received from customers and cash paid for running costs are the same as they were in Year 3. Exhibit 8.9 sets out the spreadsheet for the transactions and events.

Exhibit 8.9
Spreadsheet analysis of transactions of The Removals Company, Year 4

	Transaction or event	*Assets*			*Ownership interest*		
		Van at cost	*Accumulated depreciation of van*	*Cash*	*Ownership interest at start of year*	*Capital contributed or withdrawn*	*Profit = revenue minus (expenses)*
Year 4		£	£	£	£	£	£
1 Jan.	Amounts brought forward at start of year	60,000	(36,000)	124,000	148,000		
All year	Collected cash from customers			120,000			120,000
All year	Paid for wages, fuel, etc.			(58,000)			(58,000)
31 Dec.	Calculate annual depreciation		(18,000)				(18,000)
	Totals	60,000	(54,000)	186,000	148,000		44,000
			192,000			192,000	

Now suppose that the van is sold for £6,000 in cash on the final day of December Year 4. The spreadsheet contained in Exhibit 8.9 requires further attention, the additional accounting impact of the sale being seen in Exhibit 8.10.

Exhibit 8.10

Spreadsheet analysis of transactions of The Removals Company, Year 4, including sale of non-current (fixed) asset

	Transaction or event	*Assets*			*Ownership interest*		
		Van at cost	*Accumulated depreciation of van*	*Cash*	*Ownership interest at start of year*	*Capital contributed or withdrawn*	*Profit = revenue minus (expenses)*
Year 4		£	£	£	£	£	£
1 Jan.	Amounts brought forward at start of year	60,000	(36,000)	124,000	148,000		
All year	Collected cash from customers			120,000			120,000
All year	Paid for wages, fuel, etc.			(58,000)			(58,000)
31 Dec.	Calculate annual depreciation		(18,000)				(18,000)
31 Dec.	Van disposal	(60,000)	54,000	6,000			
	Totals	nil	nil	192,000	148,000		44,000
		192,000			192,000		

The disposal of the van must be analysed in stages:

1 collecting cash;
2 transferring ownership of the vehicle;
3 removing the vehicle from the accounting records.

When the vehicle is removed from the record, two columns must be reduced to zero. These are the *van at cost* column and the *accumulated depreciation* column. The van at cost column shows the original cost of £60,000 and the accumulated depreciation shows the amount of £54,000 which has to be deducted to show the amount of the net book value. The asset of cash increases by £6,000. In terms of the accounting equation:

Assets		–	Liabilities	=	Ownership interest
	£		no change		no change
Increase in cash	**6,000**				
Decrease van:					
At cost	**60,000**				
Accumulated depreciation	**(54,000)**				
	6,000				

The resulting balance sheet and income statement (profit and loss account) are shown in Exhibit 8.11.

Exhibit 8.11

The Removals Company: Balance sheet at end of Year 4 and Income statement (profit and loss account) for Year 4

The Removals Company
Balance sheet at 31 December Year 4

	£
Non-current (fixed) assets	nil
Current assets	
Cash	192,000
Total assets	192,000
Ownership interest	
Ownership interest at the start of the year	148,000
Profit of the year	44,000
	192,000

The Removals Company
Income statement (profit and loss account)
for the year ended 31 December Year 4

	£	£
Revenue		
Fees for removal work		120,000
Expenses		
Wages, fuel and other running costs	(58,000)	
Depreciation	(18,000)	
		(76,000)
Net profit		44,000

8.8.5 Selling for a price which is not equal to the net book value

The previous illustration was based on selling the van for £6,000, an amount equal to the net book value. Suppose instead it was sold for £9,000. There is a gain on disposal of £3,000. This gain is reported in the income statement (profit and loss account).

Assets		–	Liabilities	=	**Ownership interest**
	£				
Increase cash	**9,000**				
Decrease van:			no change		**Increase by £3,000**
At cost	**60,000**				
Accumulated depreciation	**(54,000)**				
	6,000				

If the amount of the gain or loss on disposal is relatively small, it may be deducted from the depreciation charge. In that situation the income statement (profit and loss account) would appear as shown in Exhibit 8.12 where bold printing highlights the difference when compared with the income statement (profit and loss account) in Exhibit 8.11. If the gain or loss is **material** it will be reported separately.

Exhibit 8.12

Income statement (profit and loss account) for Year 4 when proceeds of sale exceed net book value of non-current (fixed) asset

The Removals Company
Income statement (profit and loss account)
for the year ended 31 December Year 4

	£	£
Revenue		
Fees for removal work		120,000
Expenses		
Wages, fuel and other running costs	(58,000)	
Depreciation (18,000 – 3,000)	**(15,000)**	
		(73,000)
Net profit		47,000

8.8.6 A table of depreciation expense

To test your understanding of the impact of depreciation you may wish to use a table of the type shown in Exhibit 8.13. It shows that, whatever the proceeds of sale of the asset, the total expense in the income statement (profit and loss account) will always be the same but the amount of expense each year will vary.

Exhibit 8.13

Table of depreciation charge

(a) A van cost £60,000, was estimated to have a useful life of three years and a residual value of £6,000. It was sold for £9,000 on the last day of Year 3. Net profit before depreciation is £62,000.

Year	*Net profit before depreciation*	*Depreciation expense of the year*	*Net profit after depreciation*	*Cost less accumulated depreciation*	*Net book value*
	£	£	£	£	£
1	62,000	18,000	44,000	60,000 – 18,000	42,000
2	62,000	18,000	44,000	60,000 – 36,000	24,000
3	62,000	15,000	47,000	60,000 – 54,000	6,000
Total depreciation charge		51,000			
Total reported net profit			135,000		

Proceeds of sale exceed net book value by £3,000. This gain is deducted from the depreciation expense of £18,000 leaving £15,000 as the expense of the year.

(b) A van cost £60,000, was estimated to have a useful life of three years and a residual value of £9,000. The annual depreciation was calculated as £17,000. The van was sold for £9,000 on the last day of Year 3. Net profit before depreciation is £62,000.

Year	*Net profit before depreciation*	*Depreciation expense of the year*	*Net profit after depreciation*	*Cost less accumulated depreciation*	*Net book value*
	£	£	£	£	£
1	62,000	17,000	45,000	60,000 – 17,000	43,000
2	62,000	17,000	45,000	60,000 – 34,000	26,000
3	62,000	17,000	45,000	60,000 – 51,000	9,000
Total depreciation		51,000			
Total reported net profit			135,000		

Net book value equals proceeds of sale so the depreciation charge of Year 3 is the same as that of previous years.

If you compare the two tables (a) and (b) you will see that:

- total depreciation over the three years is the same in both cases;
- total net profit after depreciation over the three years is the same in both cases;
- annual depreciation in Years 1 and 2 is lower in table (b);
- net profit after depreciation in Years 1 and 2 is higher in table (b);
- net book value of the asset at the end of Years 1 and 2 is higher in table (b);
- the depreciation charge in Year 3 is higher in table (b);
- the net profit after depreciation in Year 3 is lower in table (b).

This is an example of what is referred to in accounting as an **allocation** problem (a 'sharing' problem). The expense is the same in total but is allocated (shared) differently across the years of the asset's life. As a result, there are different amounts in the income statement (profit and loss account) for each year but the total profit over the longer period is the same.

8.8.7 Impairment

An asset is impaired when the business will not be able to recover the amount shown in the balance sheet, either through use or through sale. If the enterprise believes that impairment may have taken place, it must carry out an **impairment review**. This requires comparison of the net book value with the cash-generating ability of the asset. If the comparison indicates that the recorded net book value is too high, the value of the asset is reduced and there is an expense in the income statement (profit and loss account).[7]

The impairment test may be applied to intangible non-current (fixed) assets such as goodwill, in order to justify non-amortisation. If no impairment is detected it may be argued that the asset has maintained its value and so amortisation is not necessary. If there has been impairment of the historical cost net book value, then the loss in asset value becomes an expense for the income statement (profit and loss account).

8.9 Summary

- A **non-current asset** is any asset that does not meet the definition of a current asset.[8] Non-current assets include tangible, intangible and financial assets of a long-term nature. These are also described as **fixed assets**.
- **Tangible non-current (fixed) assets** are assets that have physical substance and are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes on a continuing basis in the reporting entity's activities.
- **An intangible asset** is an identifiable non-monetary asset without physical substance.
- Users need information about the cost of an asset and the aggregate (accumulated) depreciation as the separate components of net book value. Having this detail allows users to estimate the proportion of asset life remaining to be used. This information will be reported in the notes to the balance sheet.
- Users also need information about the accounting policy on depreciation and its impact on the reported asset values. This information will be found in the notes to the accounts on accounting policies and the notes. There may also be a description and discussion in the Operating and Financial Review, including a forward-looking description of intended capital expenditure.

- **Depreciation** is estimated for the total life of the asset and then allocated to the reporting periods involved, usually annual reporting. No particular method of depreciation is required by law. Preparers of financial statements have to exercise choices. Companies in the UK commonly use straight-line depreciation. An alternative is reducing-balance depreciation. This is found more commonly in some other countries. Choice of depreciation method affects the comparability of profit.

Further reading

The following standards are too detailed for a first level course but the definitions sections may be helpful.

IASB (2004) IAS 38, *Intangible Assets*, International Accounting Standards Board.

IASB (2004) IAS 16, *Property, Plant and Equipment*, International Accounting Standards Board.

QUESTIONS

The Questions section of each chapter has three types of question. 'Test your understanding' questions to help you review your reading are in the 'A' series of questions. You will find the answers to these by reading and thinking about the material in the book. 'Application' questions to test your ability to apply technical skills are in the 'B' series of questions. Questions requiring you to show skills in problem solving and evaluation are in the 'C' series of questions. A letter [S] indicates that there is a solution at the end of the book.

A Test your understanding

A8.1 State the definition of a non-current (fixed) asset and explain why each condition is required. (Section 8.2)

A8.2 Explain the categories: (Section 8.2.1)

(a) tangible non-current (fixed) assets;
(b) intangible non-current (fixed) assets; and
(c) non-current (fixed) asset investments;

and give an example of each.

A8.3 What do users of financial statements particularly want to know about non-current (fixed) assets? (Section 8.4)

A8.4 What type of information would you expect to find about non-current (fixed) assets in the financial statements and notes of a major UK listed company? (Section 8.4)

A8.5 State the definition of depreciation. (Section 8.7)

A8.6 What is meant by **accumulated depreciation** (also called **aggregate depreciation**)? (Section 8.7)

A8.7 What information is needed to calculate annual depreciation? (Section 8.7.1)

A8.8 What is the formula for calculating straight-line depreciation? (Section 8.7.2)

A8.9 How is reducing-balance depreciation calculated? (Section 8.7.3)

A8.10 How does depreciation help to retain cash in a business for asset replacement? (Section 8.7.5)

A8.11 Why does the net book value of a non-current (fixed) asset not always equal the proceeds of sale? (Section 8.8.5)

A8.12 Why is depreciation said to cause an **allocation** problem in accounting? (Section 8.8.6)

A8.13 How should the cost of a non-current (fixed) asset be decided? (Section 8.2.2)

A8.14 [S] What are the matters of judgement relating to non-current (fixed) assets which users of financial statements should think about carefully when evaluating financial statements?

A8.15 What is meant by **impairment**? (Section 8.8.7)

B Application

B8.1 [S]
On reviewing the financial statements of a company, the company's accountant discovers that expenditure of £8,000 on repair to factory equipment has been incorrectly recorded as a part of the cost of the machinery. What will be the effect on the income statement (profit and loss account) and balance sheet when the error is corrected?

B8.2
On 1 January Year 1, Angela's Employment Agency was formed. The owner contributed £300,000 in cash which was immediately used to purchase a building. It is estimated to have a 20-year life and a residual value of £200,000. During Year 1 the agency collects £80,000 in fee income and pays £60,000 in wages and other costs. Record the transactions and events of Year 1 in an accounting equation spreadsheet. (See Exhibit 8.5 for an illustration.) Prepare the balance sheet at the end of Year 1 and the income statement (profit and loss account) for Year 1.

B8.3
Assume that fee income and costs are the same in Year 2 as in Year 1. Record the transactions and events of Year 2 in an accounting equation spreadsheet. Prepare the balance sheet at the end of Year 2 and the income statement (profit and loss account) for Year 2.

B8.4
Angela's Employment Agency sells the building for £285,000 on the final day of December Year 3. Record the transactions and events of Year 3 in an accounting equation spreadsheet. (See Exhibit 8.9 for an illustration.) Assume depreciation is calculated in full for Year 3.

B8.5
Explain how the accounting equation spreadsheet of your answer to question **B8.4** would alter if the building had been sold for £250,000.

B8.6
On 1 January Year 1, Company A purchased a bus costing £70,000. It was estimated to have a useful life of three years and a residual value of £4,000. It was sold for £8,000 on the last day of Year 3.

On 1 January Year 1, Company B purchased a bus also costing £70,000. It was estimated to have a useful life of three years and a residual value of £7,000. It was sold for £8,000 on the last day of Year 3.

Both companies have a net profit of £50,000 before depreciation. Calculate the depreciation charge and net profit of each company for each of the three years. Show that over the three years the total depreciation charge for each company is the same. (See Exhibit 8.13 for an example.)

C Problem solving and evaluation

C8.1 [S]
The Biscuit Manufacturing Company commenced business on 1 January Year 1 with capital of £22,000 contributed by the owner. It immediately paid cash for a biscuit machine costing £22,000. It was estimated to have a useful life of four years and at the end of that time was

estimated to have a residual value of £2,000. During each year of operation of the machine, the company collected £40,000 in cash from sale of biscuits and paid £17,000 in cash for wages, ingredients and running costs.

Required
(a) Prepare spreadsheets for each of the four years analysing the transactions and events of the company.
(b) Prepare a balance sheet at the end of Year 3 and an income statement (profit and loss account) for that year.
(c) Explain to a non-accountant how to read and understand the balance sheet and income statement (profit and loss account) you have prepared.

C8.2 [S]
The biscuit machine in question **C8.1** was sold at the end of Year 4 for a price of £3,000.

Required
(a) Prepare the spreadsheet for Year 4 analysing the transactions and events of the year.
(b) Prepare the balance sheet at the end of Year 4 and the income statement (profit and loss account) for Year 4.
(c) Explain to a non-accountant the accounting problems of finding that the asset was sold for £3,000 when the original expectation was £2,000.

C8.3 [S]
The Souvenir Company purchased, on 1 January Year 1, a machine producing embossed souvenir badges. The machine cost £16,000 and was estimated to have a five-year life with a residual value of £1,000.

Required
(a) Prepare a table of depreciation charges and net book value over the five-year life using straight-line depreciation.
(b) Make a guess at the percentage rate to be used in the reducing-balance calculation, and prepare a table of depreciation charges and net book value over the five years using reducing-balance depreciation.
(c) Using the straight-line method of depreciation, demonstrate the effect on the accounting equation of selling the asset at the end of Year 5 for a price of £2,500.
(d) Using the straight-line method of depreciation, demonstrate the effect on the accounting equation of disposing of the asset at the end of Year 5 for a zero scrap value.

Activities for study groups

Turn to the annual report of a listed company which you have used for activities in previous chapters. Find every item of information about non-current (fixed) assets. (Start with the financial statements and notes but look also at the operating and financial review, chief executive's review and other non-regulated information about the company.)

As a group, imagine you are the team of fund managers in a fund management company. You are holding a briefing meeting at which each person explains to the others some feature of the companies in which your fund invests. Today's subject is *non-current (fixed) assets*. Each person should make a short presentation to the rest of the team covering:

1 the nature and significance of non-current (fixed) assets in the company;

2 the asset lives stated in the accounting policies for depreciation purposes;

3 the asset lives estimated by you from calculations of annual depreciation as a percentage of asset cost;

4 the remaining useful life of assets as indicated by comparing accumulated depreciation with asset cost;

5 the company's plans for future investment in non-current (fixed) assets.

Notes and references

1. IASB (1989) *Framework for the Preparation and Presentation of Financial Statements, para 49(a)* 6.
2. IASB (2004) IAS 1 para. 57.
3. IASB (2004) IAS 1 para. 58 permits the use of alternative descriptions for non-current assets provided the meaning is clear.
4. ASB (1999) FRS 15, *Measurement of Tangible Fixed Assets*, para. 2.
5. IASB (2004) IAS 38 *Intangible Assets*, para. 8.
6. IASB (2004) IAS 16, *Property, Plant and Equipment*, para. 6.
7. There remain international differences on the precise method of estimating cash-generating ability. There are detailed rules in IAS 38 but these are beyond a first-level text.
8. IASB (2004) IAS 1 para. 57.

Supplement to Chapter 8

Recording non-current (fixed) assets and depreciation

The rules for debit and credit entries in a ledger account should by now be familiar but are set out again in Exhibit 8.14 for convenience. If you still feel unsure about any aspect of Exhibit 8.14 you should revisit the supplements of earlier chapters before attempting this one.

In this supplement you will concentrate primarily on the ledger accounts for the non-current (fixed) assets. It takes The Removals Company of the main chapter as the example for illustration.

Exhibit 8.14
Rules for debit and credit entries in ledger accounts

	Debit entries in a ledger account	*Credit entries in a ledger account*
Left-hand side of the equation		
Asset	Increase	Decrease
Right-hand side of the equation		
Liability	Decrease	Increase
Ownership interest	Expense	Revenue
	Capital withdrawn	Capital contributed

Information to be recorded

The Removals Company commences business on 1 January Year 2 by paying cash for a van costing £60,000. The cash was contributed by the owner. The van is estimated to have a useful life of three years and is estimated to have a residual value of £6,000. On 31 December Year 2 the owner calculates annual depreciation of the van as £18,000, using the formula:

$$\frac{\text{Cost} - \text{Estimated residual value}}{\text{Estimated life}}$$

During each year of operating the van, the company collected £120,000 in cash from customers and paid £58,000 in cash for drivers' wages, fuel and other running costs.

The transactions of Year 2 have been analysed in Exhibit 8.5 for their impact on the accounting equation. That same list may be used to set out the debit and credit bookkeeping entries, as shown in Exhibit 8.15.

Exhibit 8.15
Analysis of transactions for The Removals Company, Year 2

Date	*Transaction or event*	*Amount*	*Dr*	*Cr*
Year 2		£		
1 Jan.	Owner contributes cash	60,000	Cash	Ownership interest
1 Jan.	Purchase furniture van	60,000	Van at cost	Cash
All year	Collected cash from customers	120,000	Cash	Sales
All year	Paid for running costs	58,000	Running costs	Cash
31 Dec.	Calculate annual depreciation	18,000	Depreciation expense	Accumulated depreciation

Ledger accounts required to record transactions of Year 2 are as follows:

L1 Ownership interest	L4 Accumulated depreciation of van
L2 Cash	L5 Sales
L3 Van at cost	L6 Running costs
	L7 Depreciation of the year

L1 Ownership interest

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Cash	L2		60,000	(60,000)

LEONA's comment: *This ledger account shows the opening contribution to the start of the business which establishes the ownership interest.*

L2 Cash

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Ownership interest	L1	60,000		60,000
Jan. 1	Van	L3		60,000	nil
Jan.–Dec.	Sales	L5	120,000		120,000
Jan.–Dec.	Running costs	L6		58,000	62,000

LEONA's comment: *For convenience in this illustration all the sales and running costs have been brought together in one amount for the year. In reality there would be a large number of separate transactions recorded throughout the year. The balance at the end of the year shows that there is £62,000 remaining in the bank account.*

L3 Van at cost

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Cash	L2	60,000		60,000

LEONA's comment: *The van is recorded by a debit entry and this entry remains in the ledger account for as long as the van is in use by the company. A separate ledger account is maintained for the cost of the asset because it is regarded as a useful piece of information for purposes of financial statements.*

L4 Accumulated depreciation of van

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Depreciation for the year	L7		18,000	(18,000)

LEONA's comment: *The accumulated depreciation account completes the story about the van. It has an original cost of £60,000 and an accumulated depreciation at the end of Year 2 equal to £18,000. The accumulated depreciation account will always show a credit balance because it is the negative part of the asset. Deducting accumulated depreciation from cost gives a net book value of £42,000.*

L5 Sales

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan.–Dec.	Cash	L2		120,000	(120,000)

LEONA's comment: *For convenience all the sales transactions of the year have been brought together in one single amount, but in reality there would be many pages of separate transactions.*

L6 Running costs

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan.–Dec.	Cash	L2	58,000		58,000

LEONA's comment: *As with the sales transactions of the year, all running costs have been brought together in one single amount, but in reality there will be several pages of separate transactions recorded over the year.*

L7 Depreciation of the year

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Accumulated depreciation	L4	18,000		18,000

LEONA's comment: *The depreciation of the year is a debit entry because it is an expense. The process of depreciation is continuous but that is not convenient for ledger account recording, so companies prefer a single calculation at the end of the year.*

At this point a trial balance may be prepared, as explained in the Supplement to Chapter 5, and shown in Exhibit 8.16.

Exhibit 8.16
Trial balance at the end of Year 2 for The Removals Company

Ledger account title	£	£
L1 Ownership interest		60,000
L2 Cash	62,000	
L3 Van at cost	60,000	
L4 Accumulated depreciation of van		18,000
L5 Sales		120,000
L6 Running costs	58,000	
L7 Depreciation	18,000	
Totals	*198,000*	*198,000*

Closing at the end of Year 2 and starting the ledger accounts for Year 3

At the end of the year the balances on asset and liability accounts are *carried forward* to the next year. The phrase 'carried forward' means that they are allowed to remain in the ledger account at the start of the new year. The balances on revenue and expense accounts are treated differently. After the trial balance has been prepared and checked, the amounts on each revenue account and expense account are *transferred to an income statement (profit and loss account)*. Transferring a balance requires an entry of the opposite type to the balance being transferred. A debit entry is made to transfer a credit balance. A credit entry is made to transfer a debit balance. Matching but opposite entries are made in the income statement (profit and loss account). This is called 'closing' the expense or revenue account.

L5 Sales

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan.–Dec.	Cash	L2		120,000	(120,000)
Dec. 31	Transfer to profit and loss account	L8	120,000		nil

LEONA's comment: *The ledger account for sales shows a credit balance of £120,000 for the total transactions of the year. This is transferred to the income statement (profit and loss account) by making a debit entry of similar amount, so that the balance of the sales account is reduced to nil.*

L6 Running costs

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan.–Dec.	Cash	L2	58,000		58,000
Dec. 31	Transfer to income statement (profit and loss account)	L8		58,000	nil

LEONA's comment: *The ledger account for running costs shows a debit balance of £58,000 for the total transactions of the year. This is transferred to the income statement (profit and loss account) by making a credit entry of similar amount, so that the balance of the running costs account is reduced to nil.*

L7 Depreciation of the year

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Accumulated depreciation	L4	18,000		18,000
Dec. 31	Transfer to income statement (profit and loss account)	L8		18,000	nil

LEONA's comment: *The ledger account for depreciation expense shows a debit balance of £18,000 for the depreciation charge of the year. This is transferred to the income statement (profit and loss account) by making a credit entry of similar amount, so that the balance of the depreciation expense account of the year is reduced to nil.*

L8 Income statement (profit and loss account)

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Sales	L5		120,000	(120,000)
Dec. 31	Running costs	L6	58,000		(62,000)
Dec. 31	Depreciation of the year	L7	18,000		(44,000)

LEONA's comment: *The income statement (profit and loss account) in ledger form shows all items of revenue in the credit column and all items of expense in the debit column. The balance in the third column shows, at the end of the ledger account, the profit of £44,000 for the year. There is one final entry to be made, and that is to transfer the £44,000 balance of the income statement (profit and loss account) to the ownership interest account. That requires a debit entry in the income statement (profit and loss account) to remove the credit balance.*

L8 Income statement (profit and loss account)

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Sales	L5		120,000	(120,000)
Dec. 31	Running costs	L6	58,000		(62,000)
Dec. 31	Depreciation	L7	18,000		(44,000)
Dec. 31	Transfer to ownership interest	L1	44,000		nil

L1 Ownership interest

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Cash	L2		60,000	(60,000)
Dec. 31	Transfer from income statement (profit and loss account)	L8		44,000	(104,000)

LEONA's comment: *The transfer from the income statement (profit and loss account) is shown as a credit entry in the ledger account for the ownership interest. That credit entry matches the debit entry, removing the balance from the ledger account. As a check on the common sense of the credit entry, go back to the table at the start of this Supplement (Exhibit 8.14), which shows that a credit entry records an increase in the ownership interest. In the ledger account the credit entry of £44,000 increases the ownership interest from £60,000 to £104,000.*

Subsequent years

The income statement (profit and loss account)s for Year 3 and Year 4 are identical to that for Year 2. The cash account flows on in a pattern similar to that of Year 2. These ledger accounts are therefore not repeated here for Years 3 and 4. Attention is concentrated on the asset at cost and the accumulated depreciation.

L3 Van at cost

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Cash	L2	60,000		60,000
Year 3	Balance	b/fwd			60,000
Year 4	Balance	b/fwd			60,000

LEONA's comment: *The asset continues in use from one year to the next and so the ledger account remains open with the balance of £60,000 remaining. At the start of each new year the balance on each asset account is brought forward (repeated) from the previous line to show clearly that this is the amount for the start of the new accounting year. Because this*

is merely a matter of convenience in tidying up at the start of the year, the abbreviation 'b/fwd' (for 'brought forward') is entered in the 'page' column to show that there are no debit or credit entries for transactions on this line.

L4 Accumulated depreciation

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Depreciation charge for the year	L7		18,000	(18,000)
Year 3					
Dec. 31	Depreciation charge for the year	L7		18,000	(36,000)
Year 4					
Dec. 31	Depreciation charge for the year	L7		18,000	(54,000)

LEONA's comment: *The accumulated depreciation account is now showing more clearly what the word 'accumulated' means. Each year it is building in a further amount of £18,000 annual depreciation to build up the total shown in the 'balance' column. After three years the accumulated depreciation has built up to £54,000.*

L7 Depreciation of the year: Year 3

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Accumulated depreciation	L4	18,000		18,000
Dec. 31	Transfer to income statement (profit and loss account)	L8		18,000	nil

L7 Depreciation of the year: Year 4

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Accumulated depreciation	L4	18,000		18,000
Dec. 31	Transfer to income statement (profit and loss account)	L8		18,000	nil

LEONA's comment: *The depreciation of the year is an income statement (profit and loss account) item and so is transferred to the income statement (profit and loss account) each year in Years 3 and 4 in the manner explained earlier for Year 2.*

Disposal of the asset

At the end of Year 4 the asset is sold for a cash price of £6,000. To remove the asset requires entries in the 'Van at cost' account (L3), the 'Accumulated depreciation' account (L4) and the 'Cash' account (L2). The corresponding debit and credit entries are recorded in a 'Non-current (fixed) asset disposal' account (L9).

Exhibit 8.17 shows the breakdown of the sale transaction into the removal of the asset at cost, the removal of the accumulated depreciation, and the collection of cash. The entry required to remove a balance on a ledger account is the opposite to the amount of the balance. So in the 'Van at cost' account (L3) a credit entry of £60,000 is required to remove a debit balance of £60,000. In the 'Accumulated depreciation' account (L4) a debit entry is required to remove a credit balance of £54,000. In the 'Cash' account (L2) there is a debit entry of £60,000 to show that the asset of cash has increased. In each case the 'Disposal' account (L9) collects the matching debit or credit.

LEONA's comment: *The disposal account is a very convenient way of bringing together all the information about the disposal of the van. The first two lines show the full cost and accumulated depreciation. The balance column, on the second line, shows that the difference between these two items is the net book value of £6,000. Collecting cash of £6,000 is seen to match exactly the net book value, which means that there is no depreciation adjustment on disposal.*

Sale for an amount greater than the net book value

In the main text of this chapter there is a discussion of the consequences of selling the van for £9,000 cash. There would be no problem in recording that in the bookkeeping system. Everything explained in the previous section would be unchanged except for the amount of the cash received. The Disposal account would now be recorded as:

L9 Non-current (fixed) asset disposal account

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Van at cost	L3	60,000		60,000
Dec. 31	Accumulated depreciation	L4		54,000	6,000
Dec. 31	Cash	L2		9,000	(3,000)
Dec. 31	Transfer to income statement (profit and loss account)	L8	3,000		nil

Exhibit 8.17

Analysis of debit and credit aspects of sale of a fixed asset

Date	*Transaction or event*	*Amount*	*Dr*	*Cr*
Year 4		£		
Dec. 31	Removal of asset at cost	60,000	Disposal	Van at cost
Dec. 31	Accumulated depreciation	54,000	Accumulated depn	Disposal
Dec. 31	Cash	6,000	Cash	Disposal

L3 Van at cost

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Jan. 1	Cash	L2	60,000		60,000
Year 3	Balance	b/fwd			60,000
Year 4	Balance	b/fwd			60,000
Dec. 31	Disposal	L9		60,000	nil

L4 Accumulated depreciation

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Depreciation charge for the year	L7		18,000	(18,000)
Year 3					
Dec. 31	Depreciation charge for the year	L7		18,000	(36,000)
Year 4					
Dec. 31	Depreciation charge for the year	L7		18,000	(54,000)
Dec. 31	Disposal	L9	54,000		nil

L9 Non-current (fixed) asset disposal account

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Van at cost	L3	60,000		60,000
Dec. 31	Accumulated depreciation	L4		54,000	6,000
Dec. 31	Cash	L2		6,000	nil

The income statement (profit and loss account) for Year 4 would be recorded as:

L8 Income statement (profit and loss account)

Date	*Particulars*	*Page*	*Debit*	*Credit*	*Balance*
Year 2			£	£	£
Dec. 31	Sales	L5		120,000	(120,000)
Dec. 31	Running costs	L6	58,000		(62,000)
Dec. 31	Depreciation of the year	L7	18,000		(44,000)
Dec. 31	Gain on disposal	L9		3,000	(47,000)

LEONA's comment: *This income statement (profit and loss account) in ledger form matches the income statement (profit and loss account) presented at Exhibit 8.12 in the main text as a financial statement, although you will see that the latter is much more informative.*

Formula for calculating percentage rate for reducing-balance depreciation

The rate of depreciation to be applied under the reducing-balance method of depreciation may be calculated by the formula:

$$\text{rate} = (1 - {}^{n}|(R/C)) \times 100\%$$

where: n = the number of years of useful life
R = the estimated residual value
C = the cost of the asset.

For the example given in the main chapter:

n = 5 years
C = £1,000
R = £30 (The residual value must be of reasonable magnitude. To use an amount of nil for the residual value would result in a rate of 100%.)

$$\text{rate} = (1 - \sqrt[5]{(30/1{,}000)}) \times 100\%$$

To prove that the rate is 50% you will need a scientific calculator or a suitable computer package. You may know how to calculate a fifth root using logarithms. Otherwise, if you have a very basic calculator it may be easier to use trial-and-error methods.

S Test your understanding

S8.1 Prepare ledger accounts to report the transactions and events of questions **C8.1** and **C8.2**.

S8.2 Write a short commentary on each ledger account prepared in S1, to enable a non-accountant to understand their purpose and content.