

calculated by applying a percentage not to the depreciable amount but to the asset value after deduction of all previous years' depreciation. The net value of the asset after deduction of the accumulated depreciation might be called the balance of the asset, which diminishes year by year, hence diminishing balance. (The net value after depreciation is also known as *net book value* or *carrying value*.)

There is a mathematical formula for calculating the depreciation rate to be used:

$$d = 1 - \sqrt[n]{\frac{R}{A}}$$

with:  $d$  = depreciation rate  
 $n$  = number of accounting periods  
 $R$  = residual value  
 $A$  = acquisition cost

This rate is then applied each year to the balance of the asset at the beginning of the year in order to arrive at the annual depreciation expense.

To take a concrete example, suppose that an asset was acquired for €1050 and was expected to have a five-year useful life and a scrap value of €50; the annual rate would be 45.6 per cent. This is applied to the asset's net value each year as follows:

	Net book value start of year €			Depreciation expense €		Net book value end of year €	
1	1050	×	45.6%	=	479	(1050 – 479 =)	571
2	571	×	45.6%	=	260	(571 – 260 =)	311
3	311	×	45.6%	=	142	(311 – 142 =)	169
4	169	×	45.6%	=	77	(169 – 77 =)	92
5	92	×	45.6%	=	42	(92 – 42 =)	50

The diminishing balance method allocates a high proportion of expense to the early years of the asset's life. It is therefore suitable for assets whose future service life is subject to uncertainty, such as computer hardware or software, or which have a high maintenance cost in the latter part of their lives. At a practical level, the diminishing balance method is not used very widely by companies and normally, where it is used, the annual depreciation rate is approximated (in the above example a company would probably accept 45 per cent as the rate). Very often, diminishing balance is used when the tax authorities allow it (governments like to collect taxes but they also sometimes use tax to influence behaviour, and high initial depreciation encourages companies to invest – and therefore keep up with technology and create employment in the industries which make equipment).