CHAPTER 11

Depreciation, Impairments, and Depletion

ASSIGNMENT CLASSIFICATION TABLE (BY TOPIC)

Topics		Questions	Brief Exercises	Exercises	Problems	Concepts for Analysis
1.	Depreciation methods; meaning of depreciation; choice of depreciation methods.	1, 2, 3, 4, 5, 6, 10, 13, 19, 20, 28		1, 2, 3, 4, 5, 8, 14, 15	1, 2, 3	1, 2, 3, 4
2.	Computation of depreciation.	7, 8, 9, 12, 30	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 7, 10, 15	1, 2, 3, 4, 5, 6, 7, 8	1, 2
3.	Depreciation base.	6	5	8, 14, 18	1, 2, 3, 5, 6	2
4.	Errors; changes in estimate.	12	7	11, 12, 13, 14	3, 4	2
5.	Depreciation of partial periods.	14	2, 3, 4	3, 4, 5, 6, 7, 15	1, 2, 3, 6, 7	
6.	Component depreciation.	11	6, 8	9, 16, 17		
7.	Impairment of value.	15, 16, 17, 18, 28	9	18, 19, 20	9, 10	
8.	Depletion.	20, 21, 22, 23, 24	10	21, 22, 23	11, 12	
9.	Ratio analysis.	27	12	28		
10.	Convergence.	28, 29				
*11.	Revaluation accounting.	25, 26, 28, 29, 30	11	24, 25, 26, 27, 29	13, 14	

*This material is covered in an Appendix to the chapter.

ASSIGNMENT CLASSIFICATION TABLE (BY LEARNING OBJECTIVE)

Learning Objectives		Brief Exercises	Exercises	Problems
1.	Explain the concept of depreciation.			
2.	Identify the factors involved in the depreciation process.	2, 3, 4, 5, 7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1, 2, 3, 4, 5, 6, 7, 8
3.	Compare activity, straight-line and diminishing-charge methods of depreciation.	1, 2, 3, 4, 7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1, 2, 3, 4, 5, 6, 7, 8, 12
4.	Explain component depreciation.	6, 8	9, 16, 17	
5.	Explain the accounting issues related to asset impairment.	9	18, 19, 20	9, 10
6.	Explain the accounting procedures for depletion of mineral resources.	10	21, 22, 23	11, 12
7.	Explain the accounting for revaluations.	11	24, 25, 26, 27, 29	5, 13, 14
8.	Explain how to report and analyze property, plant, equipment, and mineral resources.	12	28	
*9.	Explain revaluation accounting procedures.	11	29	13, 14

ASSIGNMENT CHARACTERISTICS TABLE

Item	Description	Level of Difficulty	Time (minutes)
E11-1	Depreciation computations—SL, SYD, DDB.	Simple	15–20
E11-2	Depreciation—conceptual understanding.	Moderate	20–25
E11-3	Depreciation computations—SYD, DDB—partial periods.	Simple	15–20
E11-4	Depreciation computations—five methods.	Simple	15–25
E11-5	Depreciation computations—four methods.	Simple	20–25
E11-6	Depreciation computations—five methods, partial periods.	Moderate	20–30
E11-7	Different methods of depreciation.	Simple	25–35
E11-8	Depreciation computation—replacement, nonmonetary exchange.	Moderate	20–25
E11-9	Component depreciation.	Simple	15–20
E11-10	Depreciation computations, SYD.	Simple	10–15
E11-11	Depreciation—change in estimate.	Simple	10–15
E11-12	Depreciation computation—addition, change in estimate.	Simple	20–25
E11-13	Depreciation—replacement, change in estimate.	Simple	15–20
E11-14	Error analysis and depreciation, SL and SYD.	Moderate	20–25
E11-15	Depreciation for fractional periods.	Moderate	25–35
E11-16	Component depreciation.	Simple	10–15
E11-17	Component depreciation.	Simple	10–15
E11-18	Impairment.	Simple	10–15
E11-19	Impairment.	Simple	15–20
E11-20	Impairment.	Simple	15–20
E11-21	Depletion computations—oil.	Simple	10–15
E11-22	Depletion computations—mining.	Simple	15–20
E11-23	Depletion computations—minerals.	Simple	15–20
E11-24	Revaluation accounting.	Simple	10–15
E11-25	Revaluation accounting.	Simple	10–15
E11-26	Revaluation accounting.	Moderate	15–20
E11-27	Revaluation accounting.	Moderate	10–15
E11-28	Ratio analysis.	Moderate	15–20
*E11-29	Revaluation accounting.	Moderate	20–25
P11-1	Depreciation for partial period—SL, SYD, and DDB.	Simple	25–30
P11-2	Depreciation for partial periods—SL, Act., SYD, and DDB.	Simple	25–35
P11-3	Depreciation—SYD, Act., SL, and DDB.	Moderate	40–50
P11-4	Depreciation and error analysis.	Complex	45–60
P11-5	Comprehensive property, plant, and equipment problem.	Moderate	25–35
P11-6	Comprehensive depreciation computations.	Complex	45–60
P11-7	Depreciation for partial periods—SL, Act., SYD, and DDB.	Moderate	30–35

ASSIGNMENT CHARACTERISTICS TABLE (Continued)

Item	Description	Level of Difficulty	Time (minutes)
P11-8	Depreciation methods.	Moderate	25–35
P11-9	Impairment.	Moderate	15–25
P11-10	Impairment.	Moderate	30–35
P11-11	Mineral resources.	Moderate	15–20
P11-12	Depletion and depreciation—mining.	Moderate	25–30
*P11-13	Revaluations.	Moderate	20–25
*P11-14	Revaluations.	Moderate	25–35
CA11-1	Depreciation basic concepts.	Moderate	25–35
CA11-2	Depreciation—strike, units-of-production, obsolescence.	Moderate	25–35
CA11-3	Depreciation concepts.	Moderate	25–35
CA11-4	Depreciation choice.	Moderate	20–25

ANSWERS TO QUESTIONS

1. The differences among the terms depreciation, depletion, and amortization are that they imply a cost allocation of different types of assets. Depreciation is employed to indicate that tangible plant assets have decreased in carrying value. Where mineral resources (wasting assets) such as timber, oil, coal, and lead are involved, the term depletion is used. The expiration of intangible assets such as patents or copyrights is referred to as amortization.

2. The factors relevant in determining the annual depreciation for a depreciable asset are the initial recorded amount (cost), estimated residual value, estimated useful life, and depreciation method.

Assets are typically recorded at their acquisition cost, which is in most cases objectively determinable. But cost assignment in other cases—"basket purchases" and the selection of an implicit interest rate in asset acquisitions under deferred-payment plans—may be quite subjective, involving considerable judgment.

The residual value is an estimate of an amount potentially realizable when the asset is retired from service. The estimate is based on judgment and is affected by the length of the useful life of the asset.

The useful life is also based on judgment. It involves selecting the "unit" of measure of service life and estimating the number of such units embodied in the asset. Such units may be measured in terms of time periods or in terms of activity (for example, years or machine hours). When selecting the life, one should select the lower (shorter) of the physical life or the economic life. Physical life involves wear and tear and casualties; economic life involves such things as technological obsolescence and inadequacy.

Selecting the depreciation method is generally a judgment decision, but a method may be inherent in the definition adopted for the units of service life, as discussed earlier. For example, if such units are machine hours, the method is a function of the number of machine hours used during each period. A method should be selected that will best measure the portion of services expiring each period. Once a method is selected, it may be objectively applied by using a predetermined, objectively derived formula.

3. Disagree. Accounting depreciation is defined as an accounting process of allocating the costs of tangible assets to expense in a systematic and rational manner to the periods expected to benefit from the use of the asset. Thus, depreciation is not a matter of valuation but a means of cost allocation.

4. The carrying value of property, plant, and equipment is its cost less accumulated depreciation. If the company estimates that the asset will have an unrealistically long life, periodic depreciation charges, and hence accumulated depreciation, will be lower. As a result the carrying value of the asset will be higher.

5. A change in the amount of annual depreciation recorded does not change the facts about the decline in economic usefulness. It merely changes reported figures. Depreciation in accounting consists of allocating the cost of an asset over its useful life in a systematic and rational manner. Abnormal obsolescence, as suggested by the plant manager, would justify more rapid depreciation, but increasing the depreciation charge would not necessarily result in funds for replacement. It would not increase revenue but simply make reported income lower than it would have been, thus preventing overstatement of net income.

Recording depreciation on the books does not set aside any assets for eventual replacement of the depreciated assets. Fund segregation can be accomplished but it requires additional managerial action. Unless an increase in depreciation is accompanied by an increase in sales price of the product, or unless it affects management's decision on dividend policy, it does not affect funds.

Ordinarily higher depreciation will not lead to higher sales prices and thus to more rapid "recovery" of the cost of the asset, and the economic factors present would have permitted this higher price regardless of the excuse given or the particular rationalization used. The price could have been increased without a higher depreciation charge.

The funds of a firm operating profitably do increase, but these may be used as working capital policy may dictate. The measure of the increase in these funds from operations is not merely net income, but that figure plus charges to operations which did not require working capital, less credits to operations which did not create working capital. The fact that net income alone does not measure the increase in funds from profitable operations leads some non-accountants to the erroneous conclusion that a fund is being created and that the amount of depreciation recorded affects the fund accumulation.

Acceleration of depreciation for purposes of income tax calculation stands in a slightly different category, since this is not merely a matter of recordkeeping. Increased depreciation will tend to postpone tax payments, and thus temporarily increase funds (although the liability for taxes may be the same or even greater in the long run than it would have been) and generate gain to the firm to the extent of the value of use of the extra funds.

6. Assets are retired for one of two reasons: physical factors or economic factors—or a combination of both. Physical factors are the wear and tear, decay, and casualty factors which hinder the asset from performing indefinitely. Economic factors can be interpreted to mean any other constraint that develops to hinder the service life of an asset. Some accountants attempt to classify the economic factors into three groups: **inadequacy, supersession**, and **obsolescence**. **Inadequacy** is defined as a situation where an asset is no longer useful to a given enterprise because the demands of the firm have increased. **Supersession** is defined as a situation where the replacement of an asset occurs because another asset is more efficient and economical. **Obsolescence** is the catchall term that encompasses all other situations and is sometimes referred to as the major concept when economic factors are considered.

7. Before the amount of the depreciation charge can be computed, three basic questions must be answered:
(1) What is the depreciation base to be used for the asset?
(2) What is the asset's useful life?
(3) What method of cost apportionment is best for this asset?

8.

Cost	€800,000	Cost	€800,000
Depreciation rate	X 30%*	Depreciation for 2010	(240,000)
Depreciation for 2010	€240,000	Undepreciated cost in 2011	560,000
		Depreciation rate	X 30%
2010 Depreciation	€240,000	Depreciation for 2011	€168,000
2011 Depreciation	168,000		
Accumulated depreciation at December 31, 2011	€408,000		

*(1÷ 5) X 150%

9. Depreciation base:

Cost	$162,000	Straight-line, $147,000 ÷ 20 =	$ 7,350
Residual	(15,000)		
	$147,000	Units-of-output, $\frac{\$147,000}{84,000}$ X 20,000 =	$35,000
		Working hours, $\frac{\$147,000}{42,000}$ X 14,300 =	$50,050
		Sum-of-the-years'-digits, $147,000 X 20/210* =	$14,000
		Double-declining-balance, $162,000 X 10% =	$16,200

$$*\frac{20(20+1)}{2} = 210$$

10. From a conceptual point of view, the method which best matches revenue to expenses should be used; in other words, the answer depends on the decline in the service potential of the asset. If the service potential decline is faster in the earlier years, an accelerated method would seem to be more desirable. On the other hand, if the decline is more uniform, perhaps a straight-line approach should be used. Many firms adopt depreciation methods for more pragmatic reasons. Some companies use accelerated methods for tax purposes but straight-line for book purposes because a higher net income figure is shown on the books in the earlier years, but a lower tax is paid to the government. Others attempt to use the same method for tax and accounting purposes because it eliminates some recordkeeping costs. Tax policy sometimes also plays a role.

11. Component depreciation involves depreciating separately each part of an item of property, plant, and equipment that is significant to the total cost of the asset.

12. Original estimate: $2,500,000 ÷ 50 = $50,000 per year
Depreciation to January 1, 2011: $50,000 X 24 = $1,200,000
Depreciation in 2011 ($2,500,000 – $1,200,000) ÷ 15 years = $86,667

13. No, depreciation does not provide cash; revenues do. The funds for the replacement of the assets come from the revenues; without the revenues no income materializes and no cash inflow results. A separate decision must be made by management to set aside cash to accumulate asset replacement funds. Depreciation is added to net income on the statement of cash flows (indirect method) because it is a noncash expense, not because it is a cash inflow.

14. 25% straight-line rate X 2 = 50% double-declining rate
$8,000 X 50% = $4,000 Depreciation for first full year.
$4,000 X 6/12 = $2,000 Depreciation for half a year (first year), 2010.
$6,000 X 50% = $3,000 Depreciation for 2011.

15. To determine whether an asset is impaired, on an annual basis, companies review the asset for indicators of impairment – that is, a decline in the asset's cash-generating ability through use or sale. If the recoverable amount is less than the carrying amount, the asset has been impaired. The impairment loss is measured as the amount by which the carrying amount exceeds the recoverable amount of the asset. The recoverable amount of assets is defined as the higher of fair value less costs to sell or value-in-use.

16. Under IFRS, impairment losses on plant assets may be restored as long as the write-up is never greater than the carrying amount before impairment.

17. An impairment is deemed to have occurred if, in applying the impairment test, the carrying amount of the asset exceeds the recoverable amount of the asset. In this case, the value-in-use of €705,000 exceeds the carrying amount of the equipment of €700,000 so no impairment is assumed to have occurred; thus no measurement of the loss is made or recognized even though the fair value is €590,000.

18. Impairment losses are reported as part of operating income generally in the "Other income and expense" section. Impairment losses (and recovery of impairment losses) are similar to other costs that would flow through operations. Thus, gains (recoveries of losses) on long-lived assets should be reported as part of operating income in the "Other income and expense" section of the income statement.

19. In a decision to replace or not to replace an asset, the undepreciated cost of the old asset is not a factor to be considered. Therefore, the decision to replace plant assets should not be affected by the amount of depreciation that has been recorded. The relative efficiency of new equipment as compared with that presently in use, the cost of the new facilities, the availability of capital for the new asset, etc., are the factors entering into the decision. Normally, the fact that the asset had been fully depreciated through the use of some accelerated depreciation method, although the asset was still in use, should not cause management to decide to replace the asset. If the new asset under consideration for replacement was not any more efficient than the old, or if it cost a good deal more in relationship to its efficiency, it is illogical for management to replace it merely because all or the major portion of the cost had been charged off for tax and accounting purposes.

If depreciation rates were higher it might be true that a business would be financially more able to replace assets, since during the earlier years of the asset's use a larger portion of its cost would have been charged to expense, and hence during this period a smaller amount of income tax paid. By selling the old asset, which might result in a capital gain, and purchasing a new asset, the higher depreciation charge might be continued for tax purposes. However, if the asset were traded in, having taken higher depreciation would result in a lower basis for the new asset.

It should be noted that expansion (not merely replacement) might be encouraged by increased depreciation rates. Management might be encouraged to expand, believing that in the first few years when they are reasonably sure that the expanded facilities will be profitable, they can charge off a substantial portion of the cost as depreciation for tax purposes. Similarly, since a replacement involves additional capital outlays, the tax treatment may have some influence.

Also, because of the inducement to expand or to start new businesses, there may be a tendency in the economy as a whole for the accounting and tax treatment of the cost of plant assets to influence the retirement of old plant assets.

It should be noted that to the extent that increased depreciation causes management to alter its decision about replacement, it is not matching costs and revenues in the closest possible manner.

20. (a) Depreciation and cost depletion are similar in the accounting sense in that:
1. The cost of the asset is the starting point from which computation of the amount of the periodic charge to operations is made.
2. The estimated life is based on economic or productive life.
3. The accumulated total of past charges to operations is deducted from the original cost of the asset on the balance sheet.
4. When output methods of computing depreciation charges are used, the formulas are essentially the same as those used in computing depletion charges.
5. Both represent an apportionment of cost under the process of matching costs with revenue.
6. Assets subject to either are reported in the same classification on the balance sheet.
7. Appraisal values are sometimes used for depreciation while discovery values are sometimes used for depletion.
8. Residual value is properly recognized in computing the charge to operations.
9. They may be included in inventory if the related asset contributed to the production of the inventory.
10. The rates may be changed upon revision of the estimated productive life used in the original rate computations.

(b) Depreciation and cost depletion are dissimilar in the accounting sense in that:
1. Depletion is almost always based on output whereas depreciation is usually based on time.
2. Many formulas are used in computing depreciation but only one is used to any extent in computing depletion.
3. Depletion applies to natural resources while depreciation applies to plant and equipment.
4. Depletion refers to the physical exhaustion or consumption of the asset while depreciation refers to the wear, tear, and obsolescence of the asset.
5. Under statutes which base the legality of dividends on accumulated earnings, depreciation is usually a required deduction but depletion is usually not a required deduction.
6. The computation of the depletion rate is usually much less precise than the computation of depreciation rates because of the greater uncertainty in estimating the productive life.
7. A difference that is temporary in nature arises from the timing of the recognition of depreciation under conventional accounting and under tax laws, and it results in the recording of deferred income taxes. On the other hand, the difference between cost depletion under conventional accounting and its counterpart, percentage depletion, under the tax laws is permanent and does not require the recording of deferred income taxes.

21. Cost depletion is the procedure by which the capitalized costs, less residual land values, of a natural resource are systematically charged to operations. The purpose of this procedure is to match the cost of the resource with the revenue it generates. The usual method is to divide the total cost less residual value by the estimated number of recoverable units to arrive at a depletion charge for each unit removed. A change in the estimate of recoverable units will necessitate a revision of the unit charge.

22. Exploration costs include expenditures for topographical and geophysical study exploratory drilling and activities to evaluate the technical feasibility of extracting a mineral resource. Development costs are exploration costs reclassified once technical feasibility and commercial viability of production are demonstrated.

23. The maximum dividend permissible is the amount of accumulated net income (after depletion) plus the amount of depletion charged. This practice can be justified for companies that expect to extract natural resources and not purchase additional properties. In effect, such companies are distributing gradually to stockholders their original investments.

24. Using full-cost accounting, the cost of unsuccessful ventures as well as those that are successful are capitalized, because a cost of drilling a dry hole is a cost that is needed to find the commercially profitable wells. Successful efforts accounting capitalizes only those costs related to successful projects. They contend that to measure cost and effort accurately for a single property unit, the only measure is in terms of the cost directly related to that unit. In addition, it is argued that full-cost is misleading because capitalizing all costs will make an unsuccessful company over a short period of time show no less income than does one that is successful.

25. The land should be reported on the statement of financial position at ¥20,000,000 and an unrealized gain of ¥5,000,000 is reported as other comprehensive income in the statement of comprehensive income.

26. A major reason must companies do not use revaluation accounting is the substantial and continuing costs associated with appraisals to determine fair value. In addition, losses associated with revaluation below historical cost decrease net income. However, revaluation increases result in higher depreciation expense and lower income.

27. Asset turnover ratio:

$$\frac{\$41}{\$140} = .293 \text{ times}$$

Rate of return on assets:

$$\frac{\$3}{\$140} = 2.1\%$$

28. IFRS adheres to many of the same principles of U.S. GAAP in the accounting for property, plant, and equipment. **Key similarities** are: (1) Under IFRS, capitalization of interest or borrowing costs incurred during construction of assets can either be expensed or capitalized. Once certain criteria are met, interest must be capitalized (this accounting has recently converged to U.S. GAAP; (2) IFRS, like U.S. GAAP, capitalizes all direct costs in self-constructed assets. IFRS does not address the capitalization of fixed overhead, although in practice, these costs are generally capitalized; (3) The accounting for exchange of non-monetary assets has recently converged between IFRS and U.S. GAAP. U.S GAAP now requires that gains on exchanges of non-monetary assets be recognized if the exchange has commercial substance. This is the framework used in IFRS; (4) IFRS also views depreciation as an allocation of cost over an asset's life; IFRS permits the same depreciation methods (straight-line, accelerated, units-of-production) as U.S. GAAP. **Key Difference:** IFRS permits asset revaluations (which are not permitted in U.S. GAAP.) Consequently, for the companies that use the revaluation framework, revaluation depreciation procedures must be followed. According to IAS 16, if revaluation is used, it must be applied to all assets in a class of assets and assets must be revalued on an annual basis.

29. While there is a single key difference, it is an important one–the issue of revaluations. With respect to revaluations, the IASB and the FASB are working on a joint project to converge their conceptual frameworks. One element of that project will examine the measurement bases used in accounting. It is too early to say whether a converged conceptual framework will recommend fair value measurement (and revaluation accounting) for property, plant, and equipment. However, this is likely to be one of the more contentious issues, given the long-standing use of historical cost as a measurement basis in U.S. GAAP.

30. Mandive makes the following journal entries in year 1, assuming straight-line depreciation.

Depreciation Expense	100,000	
Accumulated Depreciation—Plant Assets		100,000
To record depreciation expense in year 1		

Accumulated Depreciation—Plant Assets	100,000	
Plant Assets		40,000
Unrealized Gain on Revaluation—Equipment		60,000
To adjust the plant assets to fair value and record unrealized gain		

Thus, there is a 2-step process. First, record depreciation based on the cost of $400,000. As a result, depreciation expense of $100,000 is reported on the income statement. Secondly, the revaluation of $60,000 which is the difference between the fair value of $360,000 and the book value of $300,000 is recorded.

Note to Instructor: The unrealized gain is reported in equity as a component of other comprehensive income. Mandive now reports the following information at the end of year 1 for its plant assets:

Plant Assets ($400,000 – $40,000)	$360,000
Accumulated depreciation—Plant assets	–0–
Book value	$360,000
Unrealized gain	$ 60,000

As indicated, $360,000 is the new basis of the asset. Depreciation expense of $100,000 is reported in the income statement and $60,000 is reported in other comprehensive income. The $60,000 of other comprehensive income then is also reported as an unrealized gain in the statement of financial position. Assuming no change in the useful life, depreciation in year 2 will be $120,000 ($360,000 ÷ 3).

SOLUTIONS TO BRIEF EXERCISES

BRIEF EXERCISE 11-1

2010: $\frac{(\$50{,}000 - \$2{,}000) \times 23{,}000}{160{,}000} = \underline{\$6{,}900}$

2011: $\frac{(\$50{,}000 - \$2{,}000) \times 31{,}000}{160{,}000} = \underline{\$9{,}300}$

BRIEF EXERCISE 11-2

(a) $\frac{€80{,}000 - €8{,}000}{8} = \underline{€9{,}000}$

(b) $\frac{€80{,}000 - €8{,}000}{8} \times 4/12 = \underline{€3{,}000}$

BRIEF EXERCISE 11-3

(a) (€80,000 – €8,000) X 8/36* = <u>€16,000</u>

(b) [(€80,000 – €8,000) X 8/36] X 9/12 = <u>€12,000</u>

*[8(8 + 1)] ÷ 2

BRIEF EXERCISE 11-4

(a) €80,000 X 25%* = <u>€20,000</u>

(b) (€80,000 X 25%) X 3/12 = <u>€5,000</u>

*(1/8 X 2)

BRIEF EXERCISE 11-5

Depreciable Base = ($28,000 + $200 + $125 + $500 + $475) – $3,000 = $26,300.

BRIEF EXERCISE 11-6

Component	Depreciation Expense	
A	($70,000 – $7,000)/10 =	$ 6,300
B	($50,000 – $5,000)/5 =	9,000
C	($82,000 – $4,000)/12 =	6,500
		$21,800

BRIEF EXERCISE 11-7

Annual depreciation expense:	(£8,000 – £1,000)/5	= £1,400
Book value, 1/1/11:	£8,000 – (2 X £1,400)	= £5,200
Depreciation expense, 2011:	(£5,200 – £500)/2	= £2,350

BRIEF EXERCISE 11-8

Component	Depreciation Expense		
Building	(HK$11,000,000 – 0) ÷ 40	=	HK$275,000
15-year property	(HK$ 150,000 – 0) ÷ 15	=	10,000
5-year property	(HK$ 150,000 – 0) ÷ 5	=	30,000
			HK$315,000

BRIEF EXERCISE 11-9

Impairment test:

Present value of future net cash flows* ($500,000) < Carrying amount ($520,000); therefore, the asset has been impaired.

Journal entry:

Loss on Impairment	**20,000**	
Accumulated Depreciation ($520,000 – $500,000)		**20,000**

***Used as recoverable amount because it is greater than fair value less costs to seed.**

BRIEF EXERCISE 11-10

Inventory	**73,500**	
Accumulated Depletion		**73,500**

$$\frac{\$400{,}000 + \$100{,}000 + \$80{,}000 - \$160{,}000}{4{,}000} = \$105 \text{ per ton}$$

$$700 \times \$105 = \$73{,}500$$

BRIEF EXERCISE 11-11

(a)	**Accumulated Depreciation—Equipment**	**100,000,000**	
	Equipment	**150,000,000**	
	Unrealized Gain on Revaluation		**250,000,000**
(b)	**Depreciation Expense (¥650,000,000 – 0) ÷ 4**	**162,500,000**	
	Accumulated Depreciation—Equipment		**162,500,000**

BRIEF EXERCISE 11-12

(a) Asset turnover ratio:

$$\frac{\$7,867}{\frac{\$7,745 + \$6,445}{2}} = 1.109 \text{ times}$$

(b) Profit margin on sales:

$$\frac{\$854}{\$7,867} = 10.86\%$$

(c) Rate of return on assets:

1. 1.109 X 10.86% = 12.04%

2. $$\frac{\$854}{\frac{\$7,745 + \$6,445}{2}} = 12.04\%$$

SOLUTIONS TO EXERCISES

EXERCISE 11-1 (15–20 minutes)

(a) Straight-line method depreciation for each of Years 1 through 3 =

$$\frac{\$518{,}000 - \$50{,}000}{12} = \underline{\$39{,}000}$$

(b) Sum-of-the-Years'-Digits = $\frac{12 \times 13}{2} = 78$

12/78 X ($518,000 – $50,000) = $72,000 depreciation Year 1
11/78 X ($518,000 – $50,000) = $66,000 depreciation Year 2
10/78 X ($518,000 – $50,000) = $60,000 depreciation Year 3

(c) Double-Declining-Balance method depreciation rate. $\frac{100\%}{12} \times 2 = 16.67\%$

$518,000 X 16.67% = $86,351 depreciation Year 1
($518,000 – $86,351) X 16.67% = $71,956 depreciation Year 2
($518,000 – $86,351 – $71,956) X 16.67% = $59,961 depreciation Year 3

EXERCISE 11-2 (20–25 minutes)

(a) If there is any residual value and the amount is unknown (as is the case here), the cost would have to be determined by looking at the data for the double-declining balance method.

$\frac{100\%}{5} = 20\%$; 20% X 2 = 40%

Cost X 40% = $20,000
$20,000 ÷ .40 = $50,000 Cost of asset

EXERCISE 11-2 (Continued)

(b) $50,000 cost [from (a)] – $45,000 total depreciation = $5,000 residual value.

(c) The highest charge to income for Year 1 will be yielded by the double-declining-balance method.

(d) The highest charge to income for Year 4 will be yielded by the straight-line method.

(e) The method that produces the highest book value at the end of Year 3 would be the method that yields the lowest accumulated depreciation at the end of Year 3, which is the straight-line method.

Computations:
St.-line = $50,000 – ($9,000 + $9,000 + $9,000) = $23,000 book value, end of Year 3.
S.Y.D. = $50,000 – ($15,000 + $12,000 + $9,000) = $14,000 book value, end of Year 3.
D.D.B. = $50,000 – ($20,000 + $12,000 + $7,200) = $10,800 book value, end of Year 3.

(f) The method that will yield the highest gain (or lowest loss) if the asset is sold at the end of Year 3 is the method which will yield the lowest book value at the end of Year 3, which is the double-declining balance method in this case.

EXERCISE 11-3 (15–20 minutes)

(a) $\frac{20\,(20+1)}{2} = 210$

3/4 X 20/210 X (€774,000 – €60,000) = €51,000 for 2010

	1/4 X 20/210 X (€774,000 – €60,000)	=	€17,000
+	3/4 X 19/210 X (€774,000 – €60,000)	=	48,450
			€65,450 for 2011

EXERCISE 11-3 (Continued)

(b) $\frac{100\%}{20}$ **= 5%; 5% X 2 = 10%**

3/4 X 10% X €774,000 = €58,050 for 2010

10% X (€774,000 – €58,050) = €71,595 for 2011

EXERCISE 11-4 (15–25 minutes)

(a) $279,000 – $15,000 = $264,000; $264,000 ÷ 10 yrs. = $26,400

(b) $264,000 ÷ 240,000 units = $1.10; 25,500 units X $1.10 = $28,050

(c) $264,000 ÷ 25,000 hours = $10.56 per hr.; 2,650 hrs. X $10.56 = $27,984

(d) $10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55$ **OR** $\frac{n(n+1)}{2} = \frac{10(11)}{2} = 55$

$\frac{10}{55}$ **X $264,000 X 1/3 =**	**$16,000**
$\frac{9}{55}$ **X $264,000 X 2/3 =**	**28,800**
Total for 2011	**$44,800**

(e)

$279,000 X 20% X 1/3 =	**$18,600**
[$279,000 – ($279,000 X 20%)] X 20% X 2/3 =	**29,760**
Total for 2011	**$48,360**

[May also be computed as 20% of ($279,000 – 2/3 of 20% of $279,000)]

EXERCISE 11-5 (20–25 minutes)

(a) $\frac{(\$150{,}000 - \$24{,}000)}{5}$ = $25,200/yr. = $25,200 X 5/12 = $10,500

2010 Depreciation—Straight line = $10,500

(b) $\frac{(\$150{,}000 - \$24{,}000)}{21{,}000}$ = $6.00/hr.

2010 Depreciation—Machine Usage = 800 X $6.00 = $4,800

(c)

Machine Year	Total	Allocated to 2010	Allocated to 2011
1	5/15 X $126,000 = $42,000	$17,500*	$24,500**
2	4/15 X $126,000 = $33,600		14,000***
		$17,500	$38,500

* $42,000 X 5/12 = $17,500
** $42,000 X 7/12 = $24,500
*** $33,600 X 5/12 = $14,000

2011 Depreciation—Sum-of-the-Years'-Digits = $38,500

(d) 2010 40% X ($150,000) X 5/12 = $25,000

2011 40% X ($150,000 – $25,000) = $50,000

OR

1st full year (40% X $150,000) = $60,000

2nd full year [40% X ($150,000 – $60,000)] = $36,000

2010 Depreciation =	5/12 X $60,000 =	$25,000
2011 Depreciation =	7/12 X $60,000 =	$35,000
	5/12 X $36,000 =	15,000
		$50,000

EXERCISE 11-6 (20–30 minutes)

(a) 2010 Straight-line $\frac{\$304,000 - \$16,000}{8}$ **= $36,000/year**

3 months—Depreciation ($36,000 X 3/12) = $9,000

(b) 2010 Output $\frac{\$304,000 - \$16,000}{40,000}$ **= $7.20/output unit**

1,000 units X $7.20 = $7,200

(c) 2010 Working hours $\frac{\$304,000 - \$16,000}{20,000}$ **= $14.40/hour**

525 hours X $14.40 = $7,560

(d) 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 36 OR $\frac{n(n+1)}{2} = \frac{8(9)}{2} = 36$

			Allocated to		
Sum-of-the-years'-digits	**Total**	**2010**	**2011**	**2012**
Year 1	**8/36 X $288,000 =**	**$64,000**	**$16,000**	**$48,000**	
2	**7/36 X $288,000 =**	**$56,000**		**14,000**	**$42,000**
3	**6/36 X $288,000 =**	**$48,000**			**12,000**
			$16,000	**$62,000**	**$54,000**

2012: $54,000 = (9/12 of 2nd year of machine's life plus 3/12 of 3rd year of machine's life)

(e) Double-declining-balance 2011: 1/8 X 2 = 25%.

2010: 25% X $304,000 X 3/12 = $19,000

2011: 25% X ($304,000 – $19,000) = $71,250

OR

1st full year (25% X $304,000) = $76,000

EXERCISE 11-6 (Continued)

2nd full year [25% X ($304,000 – $76,000)] = $57,000

2010 Depreciation 3/12 X $76,000 = $19,000

2011 Depreciation 9/12 X $76,000 = $57,000
3/12 X $57,000 = 14,250
$71,250

EXERCISE 11-7 (25–35 minutes)

Methods of Depreciation

Description	Date Purchased	Cost	Residual	Life	Method	Accum. Depr. to 2010	2011 Depr.
A	2/12/09	$159,000	$16,000	10	(a) SYD	$37,700	(b) $22,100
B	8/15/08	(c) 79,000	21,000	5	SL	29,000	(d) 11,600
C	7/21/07	88,000	28,500	8	DDB	(e) 55,516	(f) 3,984
D	(g) 10/12/09	219,000	69,000	5	SYD	70,000	(h) 35,000

Machine A—Testing the methods

(a) Straight-Line Method for 2009 **$ 7,150** **[($159,000 – $16,000) ÷ 10] X 1/2**

Straight-Line Method for 2010 **$14,300**

Total Straight Line **$21,450**

Double-Declining-Balance for 2009 **$15,900** **($159,000 X .2 X .5)**

Double-Declining-Balance for 2010 **$28,620** **[($159,000 – $15,900) X .2]**

Total Double Declining Balance **$44,520**

Sum-of-the-Years-Digits for 2009 **$13,000** **[($159,000 – $16,000) X 10/55 X .5]**

Sum-of-the-Years-Digits for 2010 **$24,700** **($143,000 X 10/55 X 1/2) + ($143,000 X 9/55 X .5)**

Total Sum-of-the-Years-Digits **$37,700**

Method used must be **SYD**

(b) Using SYD, 2011 Depreciation is **$22,100** **($143,000 X 9/55 X 1/2) + ($143,000 X 8/55 X .5)**

EXERCISE 11-7 (Continued)

Machine B—Computation of the cost

(c) Asset has been depreciated for 2 1/2 years using the straight-line method.

Annual depreciation is then equal to $29,000 divided by 2 1/2 or $11,600.
11,600 times 5 plus the residual value is equal to the cost.
Cost is $79,000 [($11,600 X 5) + $21,000].

(d) Using SL, 2011 Depreciation is $11,600.

Machine C—Using the double-declining-balance method of depreciation

(e) 2007's depreciation is	**$11,000**	**($88,000 X .25 X .5)**
2008's depreciation is	**$19,250**	**($88,000 – $11,000) X .25**
2009's depreciation is	**$14,438**	**($88,000 – $30,250) X .25**
2010's depreciation is	**$10,828**	**($88,000 – $44,688) X .25**
Accumulated Depreciation at 12/31/10	**$55,516**	

(f) Using DDB, 2011 Depreciation is $3,984, which results in the carrying value of the machine equal to the residual value.

Machine D—Computation of Year Purchased

(g) First Half Year using SYD =	**$25,000**	**[($219,000 – $69,000) X 5/15 X .5]**
Second Year using SYD =	**$45,000**	**($150,000 X 5/15 X .5) + ($150,000 X 4/15 X .5)**
	$70,000	

Thus the asset must have been purchased on October 12, 2009

(h) Using SYD, 2011 Depreciation is	**$35,000**	**($150,000 X 4/15 X .5) + ($150,000 X 3/15 X .5)**

EXERCISE 11-8 (20–25 minutes)

Old Machine

June 1, 2008	**Purchase**	**$31,800**
	Freight	**200**
	Installation	**500**
	Total cost	**$32,500**

Annual depreciation charge: ($32,500 – $2,500) ÷ 10 = $3,000

On June 1, 2009, debit the old machine for $2,700 and reduce the book value by $900; the revised total cost is $34,300 ($32,500 + $2,700 – $900); thus the revised annual depreciation charge is: ($34,300 – $2,500 – $3,000) ÷ 9 = $3,200.

Book value, old machine, June 1, 2012:	
[$34,300 – $3,000 – ($3,200 X 3)]	**$ 21,700**
Fair value	**(20,000)**
Loss on exchange	**1,700**
Cost of removal	**75**
Total loss	**$ 1,775**

(Note to instructor: The above computation is done to determine whether there is a gain or loss from the exchange of the old machine with the new machine and to show how the cost of removal might be reported.

New Machine

Basis of new machine	**Cash paid ($35,000 – $20,000)**	**$15,000**
	Fair value of old machine	**20,000**
	Installation cost	**1,500**
	Total cost of new machine	**$36,500**

Depreciation for the year beginning June 1, 2012 = ($36,500 – $4,000) ÷ 10 = $3,250.

EXERCISE 11-9 (15–20 minutes)

(a)

Component	Cost	Estimated Residual	Depreciable Cost	Estimated Life	Depreciation per Year
A	$ 40,500	$ 5,500	$ 35,000	10	$ 3,500
B	33,600	4,800	28,800	9	3,200
C	36,000	3,600	32,400	8	4,050
D	19,000	1,500	17,500	7	2,500
E	23,500	2,500	21,000	6	3,500
	$152,600	$17,900	$134,700		$16,750

	Depreciation Expense	16,750	
	Accumulated Depreciation—Equipment		16,750

(b)

	Equipment	40,000	
	Accumulated Depreciation—Equipment	19,200*	
	Loss on Disposal of Equipment	14,400	
	Equipment		33,600
	Cash		40,000

*$3,200 X 6 = $19,200

EXERCISE 11-10 (10–15 minutes)

$$\text{Sum-of-the-years'-digits} = \frac{8 \times 9}{2} = 36$$

Using Y to stand for the years of remaining life:

Y/36 X ($502,000 – $70,000) = $60,000

Multiplying both sides by 36:

$432,000 X Y = $2,160,000
Y = $2,160,000 ÷ $432,000
Y = 5

The year in which there are five remaining years of life at the beginning of that given year is 2010.

EXERCISE 11-11 (10–15 minutes)

(a) No correcting entry is necessary because changes in estimate are handled in the current and prospective periods.

(b) Revised annual charge

Book value as of 1/1/2011 [$52,000 – ($6,000 X 5)] = $22,000
Remaining useful life, 5 years (10 years – 5 years)
Revised residual value, $4,500
($22,000 – $4,500) ÷ 5 = $3,500

Depreciation Expense—Equipment	**3,500**	
Accumulated Depreciation—Equipment		**3,500**

EXERCISE 11-12 (20–25 minutes)

(a) 1984–1993—($1,900,000 – $60,000) ÷ 40 = $46,000/yr.

(b) 1994–2011—Building ($1,900,000 – $60,000) ÷ 40 = $46,000/yr.
Addition ($470,000 – $20,000) ÷ 30 = 15,000/yr.
$61,000/yr.

(c) No adjusting entry required.

(d) Revised annual depreciation

Building

Book value: ($1,900,000 – $1,288,000*)	**$612,000**
Residual value	**(60,000)**
	552,000
Remaining useful life	**÷ 32 years**
Annual depreciation	**$ 17,250**

***$46,000 X 28 years = $1,288,000**

EXERCISE 11-12 (Continued)

Addition

Book value: ($470,000 – $270,000**)	$200,000
Residual value	(20,000)
	180,000
Remaining useful life	÷ 32 years
Annual depreciation	$ 5,625

**$15,000 X 18 years = $270,000

Annual depreciation expense—building ($17,250 + $5,625) $22,875

EXERCISE 11-13 (15–20 minutes)

(a) $2,400,000 ÷ 40 = $60,000

(b)	Loss on Disposal of Plant Assets	90,000	
	Accumulated Depreciation—Building ($180,000 X 20/40)	90,000	
	Building		180,000
	Building	300,000	
	Cash		300,000

Note: The most appropriate entry would be to remove the old roof and record a loss on disposal, because the cost of the old roof is given. Another alternative would be to debit Accumulated Depreciation on the theory that the replacement extends the useful life of the building. The entry in this case would be as follows:

Accumulated Depreciation—Building	300,000	
Cash		300,000

As indicated, this approach does not seem as appropriate as the first approach.

EXERCISE 11-13 (Continued)

(c) No entry necessary.

(d) (Assume the cost of the old roof is removed)

Building ($2,400,000 – $180,000 + $300,000)	$2,520,000
Accumulated Depreciation ($60,000 X 20 – $90,000)	(1,110,000)
	1,410,000
Remaining useful life	÷ 25 years
Depreciation—2011 ($1,410,000 ÷ 25)	$ 56,400

Note to Instructor:
If it is assumed that the cost of the new roof is debited to Accumulated Depreciation:

Book value of the building prior to the replacement of roof $2,400,000 – ($60,000 X 20) =	$1,200,000
Cost of new roof	300,000
	$1,500,000
Remaining useful life	÷ 25 years
Depreciation—2011 ($1,500,000 ÷ 25)	$ 60,000

EXERCISE 11-14 (20–25 minutes)

(a)

Repair Expense	500	
Equipment		500

(b) The proper ending balance in the asset account is:

January 1 balance		$133,000
Add: New equipment:		
Purchases	$32,000	
Freight	700	
Installation	2,500	
		35,200
Less: Cost of equipment sold		23,000
December 31 balance		$145,200

(1) Straight-line: $145,200 ÷ 10 = $14,520

EXERCISE 11-14 (Continued)

(2) Sum-of-the-years'-digits: 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55

$$\text{OR } \frac{n(n+1)}{2} = \frac{10(11)}{2} = 55$$

For equipment purchased in 2009: $110,000 ($133,000 – $23,000) of the cost of equipment purchased in 2009, is still on hand.

8/55 X $110,000 = ...	$16,000
For equipment purchased in 2011: 10/55 X $35,200 =.....	6,400
Total	$22,400

EXERCISE 11-15 (25–35 minutes)

(a)

		2005	2006–2011 Incl.	2012	Total
(1)	$240,000 – $21,000 = $219,000				
	$219,000 ÷ 12 = $18,250				
	per yr. ($50 per day)				
	133*/365 of $18,250 =	$ 6,650			
	2006–2011 Include. (6 X $18,250)		$109,500		
	68/365 of $18,250 =			$ 3,400	$119,550
(2)		0	109,500	18,250	127,750
(3)		18,250	109,500	0	127,750
(4)		9,125	109,500	9,125	127,750
(5)	4/12 of $18,250	6,083			
	2006–2011 Inc.		109,500		
	3/12 of $18,250			4,563	120,146
(6)		0	109,500	0	109,500

*(11 + 30 + 31 + 30 + 31)

(b) The most accurate distribution of cost is given by methods 1 and 5 if it is assumed that straight-line depreciation is satisfactory. Reasonable accuracy is normally given by 2, 3, or 4. The simplest of the applications are 6, 2, 3, 4, 5, and 1, in about that order. Methods 2, 3, and 4 combine reasonable accuracy with simplicity of application.

EXERCISE 11-16 (10-15 minutes)

(a) ($50,000 – 0) ÷ 10 = $5,000

(b)

Component	Depreciation Expense		
Tires	($ 6,000 – 0) ÷ 2	=	$3,000
Transmission	($10,000 – 0) ÷ 5	=	2,000
Trucks	($34,000 – 0) ÷ 10	=	3,400
			$8,400

(c) A company would want to use component depreciation if it believed this method produced more accurate results.

EXERCISE 11-17 (10-15 minutes)

(a)

Component	Depreciation Expense		
Building structure	€4,200,000 ÷ 60	=	€ 70,000
Building engineering	2,100,000 ÷ 30	=	70,000
Building external works	700,000 ÷ 30	=	23,333
			€163,333

(b)

Building Engineering	2,300,000	
Accumulated Depreciation (€2,100,000 X 20/30)	1,400,000	
Loss on Disposal of Plant Assets	700,000	
Building Engineering		2,100,000
Cash		2,300,000

EXERCISE 11-18 (10–15 minutes)

(a) **December 31, 2010**

Loss on Impairment	1,000,000	
Accumulated Depreciation—Equipment		1,000,000

Cost	€9,000,000
Accumulated depreciation	(1,000,000)
Carrying amount	8,000,000
Fair value less cost of disposal	(7,000,000)
Loss on impairment	€1,000,000

(b) **December 31, 2011**

Depreciation Expense	1,750,000	
Accumulated Depreciation—Equipment		1,750,000

New carrying amount	€7,000,000
Useful life	÷ 4 years
Depreciation per year	€1,750,000

(c)

Accumulated Depreciation—Equipment	1,800,000	
Recovery of Impairment Loss		1,800,000

EXERCISE 11-19 (15–20 minutes)

(a)

Loss on Impairment	3,600,000	
Accumulated Depreciation—Equipment		3,600,000

Cost	€9,000,000
Accumulated depreciation	(1,000,000)
Carrying amount	8,000,000
Less: Recoverable amount	4,400,000
Loss on impairment	€3,600,000

EXERCISE 11-19 (Continued)

(b) No entry necessary. Depreciation is not taken on assets intended to be sold.

(c)	**Accumulated Depreciation—Equipment**	**680,000**	
	Recovery of Loss on Impairment		**680,000**

Fair value	**€5,100,000**	
Less: Cost of disposal	**20,000**	**5,080,000**
Carrying amount		**(4,400,000*)**
Recovery of impairment loss		**€ 680,000**

***(€9,000,000 – €1,000,000 – €3,600,000)**

EXERCISE 11-20 (15–20 minutes)

(a)

	December 31, 2010	
Loss on Impairment	**200,000**	
Accumulated Depreciation—Equipment		**200,000**

Cost	**$900,000**
Accumulated depreciation	**(400,000)**
Carrying amount	**500,000**
Recoverable amount	**(300,000*)**
Loss on impairment	**$200,000**

***Use $300,000 (value-in-use) because it is greater than fair value less cost of disposal.**

(b) It should be reported in the other income and expense section in the income statement.

(c)	**Accumulated Depreciation—Equipment**	**45,000**	
	Recovery of Impairment Loss [$270,000 – ($300,000 – $75,000)]		**45,000**

EXERCISE 11-20 (Continued)

(d) To determine whether an asset is impaired, on an annual basis, companies review the asset for indicators of impairment—that is, a decline in the asset's cash-generating ability through use or sale. If impairment indicators are present, then the company compares the asset's recoverable amount with its carrying amount. If the carrying amount is higher than the recoverable amount, the difference is an impairment loss. Recoverable value is defined as the higher of fair value less costs to sell or value-in-use.

EXERCISE 11-21 (10–15 minutes)

Cost per barrel of oil:

Initial payment	$\frac{\$600,000}{250,000} =$	**$2.40**
Rental	$\frac{\$31,500}{18,000} =$	**1.75**
Premium, 5% of $65		**3.25**
Reconditioning of land	$\frac{\$30,000}{250,000} =$	**.12**
Total cost per barrel		**$7.52**

EXERCISE 11-22 (15–20 minutes)

Depletion base: $1,250,000 + $90,000 – $100,000 + $200,000 = $1,440,000

Depletion rate: $1,440,000 ÷ 60,000 = $24/ton

(a) Per unit mineral cost: $24/ton
(b) 12/31/10 inventory: $24 X 6,000 tons = $144,000
(c) Cost of goods sold 2010: $24 X 24,000 tons = $576,000

EXERCISE 11-23 (15–20 minutes)

(a) $\frac{\$850{,}000 + \$170{,}000 + \$40{,}000^* - \$100{,}000}{12{,}000{,}000}$ **= .08 depletion per unit**

***Note to instructor: The $40,000 should be depleted because it is an environmental liability provision.**

2,500,000 units extracted X $.08 = $200,000 depletion for 2010

(b) 2,200,000 units sold X $.08 = $176,000 charged to cost of goods sold for 2010

EXERCISE 11-24 (10-15 minutes)

December 31, 2010		
Land	**20,000**	
Unrealized Gain on Revaluation—Land		**20,000**
December 31, 2011		
Unrealized Gain on Revaluation—Land	**20,000**	
Loss on Impairment	**20,000**	
Land		**40,000**
December 31, 2012		
Land	**25,000**	
Recovery of Impairment Loss		**20,000**
Unrealized Gain on Revaluation—Land		**5,000**

EXERCISE 11-25 (10-15 minutes)

Value at December 31	Accumulated Other Comprehensive Income	Other Comprehensive Income	Recognized in Net Income
2008	$50,000	$50,000	—
2009	—	(50,000)	($40,000)
2010	—	—	25,000
2011	10,000	10,000	15,000
2012	60,000	50,000	—

EXERCISE 11-26 (15-20 minutes)

December 31, 2008		
Land ($450,000 – $400,000)	50,000	
Unrealized Gain on Revaluation—Land		50,000
December 31, 2009		
Unrealized Gain on Revaluation—Land	50,000	
Loss on Impairment ($400,000 – $360,000)	40,000	
Land ($450,000 – $360,000)		90,000
December 31, 2010		
Land ($385,000 – $360,000)	25,000	
Recovery of Impairment Loss		25,000
December 31, 2011		
Land ($410,000 – $385,000)	25,000	
Recovery of Impairment Loss ($40,000 – $25,000)		15,000
Unrealized Gain on Revaluation—Land		10,000
December 31, 2012		
Land ($460,000 – $410,000)	50,000	
Unrealized Gain on Revaluation—Land		50,000

EXERCISE 11-27 (10-15 minutes)

(a)

January 1, 2009		
Equipment	**12,000**	
Cash		**12,000**
December 31, 2009		
Depreciation Expense	**2,000**	
Accumulated Depreciation—Equipment		**2,000**

(b)

December 31, 2010		
Depreciation Expense	**2,000**	
Accumulated Depreciation—Equipment		**2,000**
Accumulated Depreciation—Equipment	**4,000**	
Loss on Impairment	**1,000**	
Equipment (€12,000 – €7,000)		**5,000**

(c) Depreciation expense—2011: (€12,000 – €5,000) ÷ 4 = €1,750

EXERCISE 11-28 (15–20 minutes)

(a) Asset turnover ratio:

$$\frac{\$10,301}{\frac{\$13,659 + \$14,320}{2}} = .736 \text{ times}$$

(b) Rate of return on assets:

$$\frac{\$676}{\frac{\$13,659 + \$14,320}{2}} = 4.83\%$$

EXERCISE 11-28 (Continued)

(c) Profit margin on sales:

$$\frac{\$676}{\$10,301} = 6.56\%$$

(d) The asset turnover ratio times the profit margin on sales provides the rate of return on assets computed for Eastman Kodak as follows:

Profit margin on sales	X	Asset Turnover		Return on Assets
6.56%	X	.736	=	4.83%

Note the answer 4.83% is the same as the rate of return on assets computed in (b) above.

***EXERCISE 11-29 (20-25 minutes)**

(a)

December 31, 2008		
Depreciation Expense	1,000	
Accumulated Depreciation—Equipment		1,000
December 31, 2009		
Depreciation Expense	1,000	
Accumulated Depreciation—Equipment		1,000
Accumulated Depreciation—Equipment	2,000	
Equipment ($10,000 – $8,800)		1,200
Unrealized Gain on Revaluation—Equipment		800

EXERCISE 11-29 (Continued)

December 31, 2010		
Depreciation Expense ($8,800 ÷ 8)	**1,100**	
Accumulated Depreciation—Equipment		**1,100**
Accumulated Other Comprehensive Income	**100**	
Retained Earnings ($1,100 – $1,000)		**100**
December 31, 2011		
Depreciation Expense	**1,100**	
Accumulated Depreciation—Equipment		**1,100**
Accumulated Other Comprehensive Income	**100**	
Retained Earnings		**100**
Accumulated Depreciation—Equipment ($1,100 X 2)	**2,200**	
Loss on Impairment	**1,000**	
Unrealized Gain on Revaluation ($800 – $100 – $100)	**600**	
Equipment ($8,800 – $5,000)		**3,800**

(b) Sterling would probably not use revaluation accounting for assets whose fair value is lower than their carrying value. When the fair value of property and buildings is less than their carrying value, the difference must be reported as a loss on impairment which reduces reported net income.

TIME AND PURPOSE OF PROBLEMS

Problem 11-1 (Time 25–30 minutes)
Purpose—to provide the student with an opportunity to compute depreciation expense using a number of different depreciation methods. The problem is complicated because the proper cost of the machine to be depreciated must be determined. For example, purchase discounts and freight charges must be considered. In addition, the student is asked to select a depreciation method that will allocate less depreciation in the early years of the machine's life than in the later years.

Problem 11-2 (Time 25–35 minutes)
Purpose—to provide the student with an opportunity to compute depreciation expense using the following methods: straight-line, units-of-output, working hours, sum-of-the-years'-digits, and declining balance. The problem is straightforward and provides an excellent review of the basic computational issues involving depreciation methods.

Problem 11-3 (Time 40–50 minutes)
Purpose—to provide the student with an opportunity to compute depreciation expense using a number of different depreciation methods. Before the proper depreciation expense can be computed, the accounts must be corrected for a number of errors made by the company in its accounting for the assets. An excellent problem for reviewing the proper accounting for plant assets and related depreciation expense.

Problem 11-4 (Time 45–60 minutes)
Purpose—to provide the student with an opportunity to correct the improper accounting for Semitrucks and determine the proper depreciation expense. The student is required to compute separately the errors arising in determining or entering depreciation or in recording transactions affecting Semitrucks.

Problem 11-5 (Time 25–35 minutes)
Purpose—to provide the student with a comprehensive problem related to property, plant, and equipment. The student must determine depreciable bases for assets, including capitalized interest, and prepare depreciation entries using various methods of depreciation.

Problem 11-6 (Time 45–60 minutes)
Purpose—to provide the student with an opportunity to solve a complex problem involving a number of plant assets. A number of depreciation computations must be made, specifically straight-line, 150% declining balance, and sum-of-the-years'-digits. In addition, the cost of assets acquired is difficult to determine.

Problem 11-7 (Time 30–35 minutes)
Purpose—to provide the student with the opportunity to solve a moderate problem involving a machinery purchase and the depreciation computations using straight-line, activity, sum-of-the-years'-digits, and the double-declining-balance methods, first for full periods and then for partial periods.

Problem 11-8 (Time 25–35 minutes)
Purpose—to provide the student with an opportunity to compute depreciation expense using a number of different depreciation methods. The purpose of computing the depreciation expense is to determine which method will result in the maximization of net income and which will result in the minimization of net income over a three-year period. An excellent problem for reviewing the fundamentals of depreciation accounting.

Problem 11-9 (Time 15–25 minutes)
Purpose—to provide the student with an opportunity to analyze impairments for assets to be used and assets to be disposed of.

Time and Purpose of Problems (Continued)

Problem 11-10 (Time 30–35 minutes)
Purpose—to provide the student with an opportunity to compute the amount of an impairment loss. The student is also required to prepare journal entries to record an impairment loss and a reversal of an impairment loss.

Problem 11-11 (Time 15–20 minutes)
Purpose—to provide the student with a problem involving depletion and computation of profit or loss. The student is asked to explain how to account for exploration and evaluation costs.

Problem 11-12 (Time 25–30 minutes)
Purpose—to provide the student with a problem involving the computation of estimated depletion and depreciation costs associated with a tract of mineral land. The student must compute depletion and depreciation on a units-of-production basis (tons mined). A portion of the cost of machinery associated with the product must be allocated over different periods. The student may experience some difficulty with this problem.

***Problem 11-13 (Time 20-25 minutes)**
Purpose—to provide the student with the opportunity to record land revaluation adjustments for 3 years. The student is also required to determine the amount of other comprehensive income, impairment loss, and accumulated other comprehensive income for 2 years.

***Problem 11-14 (Time 25-35 minutes)**
Purpose—to provide the student with an opportunity to record equipment revaluation adjustments for 3 years. The student is also required to determine the amount of other comprehensive income, depreciation expense, impairment loss, and accumulated other comprehensive income for 2 years.

SOLUTIONS TO PROBLEMS

PROBLEM 11-1

(a) 1. Depreciable Base Computation:

Purchase price	$85,000
Less: Purchase discount (2%)	1,700
Freight-in	800
Installation	3,800
Cost	87,900
Less: Salvage value	1,500
Depreciation base	$86,400

2010—Straight line: ($86,400 ÷ 8 years) X 2/3 year = $7,200

2. Sum-of-the-years'-digits for 2011

	Machine Year	Total Depreciation	2010	2011
1	8/36 X $86,400 =	$19,200	$12,800*	$ 6,400**
2	7/36 X $86,400 =	$16,800		11,200***
				$17,600

* $19,200 X 2/3 = $12,800
** $19,200 X 1/3 = $6,400
*** $16,800 X 2/3 = $11,200

3. Double-declining-balance for 2010
($87,900 X 25% X 2/3) = $14,650

(b) An activity method.

PROBLEM 11-2

		Depreciation Expense	
		2010	2011
(a)	**Straight-line:**		
	(€89,000 – €5,000) ÷ 7 = €12,000/yr.		
	2010: €12,000 X 7/12	€7,000	
	2011: €12,000		€12,000
(b)	**Units-of-output:**		
	(€89,000 – €5,000) ÷ 525,000 units = €.16/unit		
	2010: €.16 X 55,000	8,800	
	2011: €.16 X 48,000		7,680
(c)	**Working hours:**		
	(€89,000 – €5,000) ÷ 42,000 hrs. = €2.00/hr.		
	2010: €2.00 X 6,000	12,000	
	2011: €2.00 X 5,500		11,000
(d)	**Sum-of-the-years'-digits:**		
	$1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$ or $\frac{n(n+1)}{2} = \frac{7(8)}{2} = 28$		
	2010: 7/28 X €84,000 X 7/12	12,250	
	2011: 7/28 X €84,000 X 5/12 = €8,750		
	6/28 X €84,000 X 7/12 = 10,500		
	€19,250		19,250
(e)	**Declining-balance:**		
	Rate = 2/7		
	2010: 7/12 X 2/7 X €89,000	14,833	
	2011: 2/7 X (€89,000 – €14,833) = €21,191		
	OR		
	2011: 5/12 X 2/7 X €89,000 = €10,595		
	2/7 X (€89,000 – €25,428) X 7/12 = 10,595		
	€21,190*		21,190

*Difference due to rounding.

PROBLEM 11-3

(a)	**Depreciation Expense—Asset A**	**3,900**	
	Accumulated Depreciation—Asset A		
	(5/55 X [£46,000 – £3,100])		**3,900**
	Accumulated Depreciation—Asset A	**35,100**	
	Asset A (£46,000 – £13,000)		**33,000**
	Gain on Disposal of Plant Assets		**2,100**
(b)	**Depreciation Expense—Asset B**	**6,720**	
	Accumulated Depreciation—Asset B		
	([£51,000 – £3,000] ÷ 15,000 X 2,100)		**6,720**
(c)	**Depreciation Expense—Asset C**	**6,000**	
	Accumulated Depreciation—Asset C		
	([£80,000 – £15,000 – £5,000] ÷ 10)		**6,000**
(d)	**Asset E**	**28,000**	
	Retained Earnings		**28,000**
	Depreciation Expense—Asset E	**5,600***	
	Accumulated Depreciation—Asset E		**5,600**

***(£28,000 X .20)**

Note: No correcting entry is needed for asset D. In 2010, Eshkol records depreciation expense of $80,000 X (10% X 2) = $16,000.

(a)

		Per Company Books			As Adjusted			Net
		Semitrucks dr. (cr.)	Acc. Dep. Semitrucks dr. (cr.)	Retained Earnings dr. (cr.)	Semitrucks dr. (cr.)	Acc. Dep., Semitrucks dr, (cr.)	Retained Earnings dr, (cr.)	Income Overstated (Understated)
1/1/08	Balance	¥ 94,000	¥(30,200)		¥94,000	¥(30,200)		
7/1/08	Purchase Truck #5	22,000			40,000			
	Trade Truck #3				(30,000)	9,000	¥ 3,000 [1]	¥ 3,000
12/31/08	Depreciation		(21,000)	$21,000		(19,800)	19,800 [2]	(1,200)
12/31/08	Balances	116,000	(51,200)	21,000	104,000	(41,000)	22,800	1,800
1/1/09	Sale of Truck #1	(3,500)			(18,000)	14,400	100 [3]	100
12/31/09	Depreciation		(22,500)	22,500		(17,200)	17,200 [4]	(5,300)
12/31/09	Balances	112,500	(73,700)	43,500	86,000	(43,800)	40,100	(3,400)
7/1/10	Purchase of Truck #6	42,000			42,000			
7/1/10	Disposal of Truck #4	(2,500)		(700)	(24,000)	14,400	6,400 [5]	7,100
12/31/10	Depreciation		(25,050)	25,050		(16,800)	16,800 [6]	(8,250)
12/31/10	Balances	152,000	(98,750)	67,850	104,000	(46,200)	63,300	(4,550)
12/31/11	Depreciation		(30,400)	30,400		(16,400)	16,400 [7]	(14,000)
12/31/11	Balances	¥152,000	¥(129,150)	¥98,250	¥104,000	¥(62,600)	¥79,700	¥(18,550)
Income effect								

[1] Implied fair market value of Truck #3 (¥40,000 – ¥22,000) ¥ 18,000
Book value of Truck #3 [¥30,000 – (¥30,000/5 X 1 1/2 yrs.)] = ¥30,000 – ¥9,000 = 21,000
Loss on Trade ¥ 3,000

[2] Truck #1: $18,000/5 = ¥ 3,600
Truck #2: $22,000/5 = 4,400
Truck #3: $30,000/5 X 1/2 = 3,000
Truck #4:$24,000/5 = 4,800
Truck #5: $40,000/5 X 1/2 = 4,000
Total ¥19,800

PROBLEM 11-4 (Continued)

[3]**Book value of Truck #1 [¥18,000 – (¥18,000/5 X 4 yrs.)] =**

¥18,000 – ¥14,400	= ¥3,600
Cash received on sale	= (3,500)
Loss on sale	¥ 100

[4]Truck #2:	¥22,000/5	=	¥4,400
Truck #4:	¥24,000/5	=	4,800
Truck #5:	¥40,000/5	=	8,000
Total			¥17,200

[5]Book value of Truck #4 ¥24,000 – [(¥24,000/5 X 3 yrs.)]	= ¥9,600
Cash received (¥700 + ¥2,500)	= 3,200
Loss on disposal	¥6,400

[6]Truck #2:	¥22,000/5 X 1/2	=	¥ 2,200
Truck #4:	¥24,000/5 X 1/2	=	2,400
Truck #5:	¥40,000/5		8,000
Truck #6:	¥42,000/5 X 1/2	=	4,200
Total			¥16,800

[7]Truck #2:	(fully dep.)	=	¥ 0
Truck #5:	¥40,000/5	=	8,000
Truck #6:	¥42,000/5	=	8,400
Total			¥16,400

(b) Compound journal entry December 31, 2011:

Accumulated Depreciation, Semitrucks	66,550	
Semitrucks		48,000
Retained Earnings		4,550
Depreciation Expense 2011		14,000

PROBLEM 11-4 (Continued)

Summary of Adjustments:

	Per Books	As Adjusted	Adjustment Dr. or (Cr.)
Semitrucks	¥152,000	¥104,000	¥(48,000)
Accumulated Depreciation	¥129,150	¥ 62,600	¥ 66,550
Prior Years' Income			
Retained Earnings, 2008	¥ 21,000	¥ 22,800	¥ 1,800
Retained Earnings, 2009	22,500	17,300	(5,200)
Retained Earnings, 2010	24,350	23,200	(1,150)
Totals	¥ 67,850	¥ 63,300	¥ (4,550)
Depreciation Expense, 2011	¥ 30,400	¥ 16,400	¥(14,000)

PROBLEM 11-5

(a) The amounts to be recorded on the books of Darby Sporting Goods Inc. as of December 31, 2010, for each of the properties acquired from Quay Athletic Equipment Company are calculated as follows:

Cost Allocations to Acquired Properties

	Appraisal Value	Remaining Purchase Price Allocations	Renovations	Capitalized Interest	Total
(1) Land	£290,000				£290,000
(2) Building		£ 77,000[1]	£100,000	£21,000[2]	198,000
(3) Machinery		33,000[1]			33,000
Totals	£290,000	£110,000	£100,000	£21,000	£521,000

Supporting Calculations

[1]Balance of purchase price to be allocated.

Total purchase price	£400,000
Less: Land appraisal	290,000
Balance to be allocated	£110,000

	Appraisal Values	Ratios			Allocated Values
Building	£105,000	105/150 =	.70	X £110,000	£ 77,000
Machinery	45,000	45/150 =	.30	X £110,000	33,000
Totals	£150,000		1.00		£110,000

PROBLEM 11-5 (Continued)

[2]Capitalizable interest.

Expenditures		Capitalization	Weighted-Average
Date	Amount	Period	Accumulated Expenditures
1/1	£ 50,000	12/12	£ 50,000
4/1	120,000	9/12	90,000
10/1	140,000	3/12	35,000
12/31	190,000	0/12	–0–
	£500,000		£175,000

Weighted-Average Accumulated Expenditures		Interest Rate		Avoidable Interest
£175,000	X	12%	=	£21,000

Note to instructor: If the interest is allocated between the building and the machinery, £14,700 (£21,000 X 105/150) would be allocated to the building and £6,300 (£21,000 X 45/150) would be allocated to the machinery.

(b) Darby Sporting Goods Inc.'s 2011 depreciation expense, for book purposes, for each of the properties acquired from Quay Athletic Equipment Company is as follows:

1. Land: No depreciation.

2. Building: Depreciation rate = 1.50 X 1/15 = .10
   2011 depreciation expense = Cost X Rate X 1/2 year
   = £198,000 X .10 X 1/2
   = £9,900

3. Machinery: Depreciation rate = 2.00 X 1/5 = .40
   2011 depreciation expense = Cost X Rate X 1/2
   = £33,000 X .40 X 1/2
   = £6,600

PROBLEM 11-5 (Continued)

(c) Arguments for the capitalization of interest costs include the following.

1. **Diversity of practices among companies and industries called for standardization in practices.**
2. **Total interest costs should be allocated to enterprise assets and operations, just as material, labor, and overhead costs are allocated. That is, under the concept of historical costs, all costs incurred to bring an asset to the condition and location necessary for its intended use should be reflected as a cost of that asset.**

Arguments against the capitalization of interest include the following:

1. **Interest capitalized in a period would tend to be offset by amortization of interest capitalized in prior periods.**
2. **Interest cost is a cost of financing, not of construction.**

(d) If Darby decides to use revaluation accounting for this building, then revaluation applies to all assets in that class of assets. Darby cannot selectively apply revaluation accounting to certain buildings but keep others at historical cost.

Darby should use revaluation accounting if they want to increase their equity base to help them meet covenant requirements or provide additional assurances to investors and creditors that the company is solvent.

Darby should not use revaluation accounting because of the continuing costs associated with appraisals to determine fair value. In addition, losses associated with revaluations decrease net income but gains associated with revaluations are not reported in net income but instead go directly to equity.

PROBLEM 11-6

(1)	**$80,000**	**Allocated in proportion to appraised values (1/10 X $800,000).**
(2)	**$720,000**	**Allocated in proportion to appraised values (9/10 X $800,000).**
(3)	**Fifty years**	**Cost less salvage ($720,000 – $40,000) divided by annual depreciation ($13,600).**
(4)	**$13,600**	**Same as prior year since it is straight-line depreciation.**
(5)	**$91,000**	**[Number of shares (2,500) times fair value ($30)] plus demolition cost of existing building ($16,000).**
(6)	**None**	**No depreciation before use.**
(7)	**$40,000**	**Fair value.**
(8)	**$6,000**	**Cost ($40,000) times percentage (1/10 X 150%).**
(9)	**$5,100**	**Cost ($40,000) less prior year's depreciation ($6,000) equals $34,000. Multiply $34,000 times 15%.**
(10)	**$168,000**	**Total cost ($182,900) less repairs and maintenance ($14,900).**
(11)	**$36,000**	**Cost less salvage ($168,000 – $6,000) times 8/36.**
(12)	**$10,500**	**Cost less salvage ($168,000 – $6,000) times 7/36 times one-third of a year.**

PROBLEM 11-6 (Continued)

(13) $52,000 **Annual payment ($6,000) times present value of annuity due at 8% for 11 years (7.710) plus down payment ($5,740). This can be found in an annuity due table since the payments are at the beginning of each year. Alternatively, to convert from an ordinary annuity to an annuity due factor, proceed as follows: For eleven payments use the present value of an ordinary annuity for 11 years (7.139) times 1.08. Multiply this factor (7.710) times $6,000 annual payment to obtain $46,260, and then add the $5,740 down payment.**

(14) $2,600 **Cost ($52,000) divided by estimated life (20 years).**

PROBLEM 11-7

(a) 1. Straight-line Method: $\frac{\$90,000 - \$6,000}{5 \text{ years}} = \$16,800$ a year

2. Activity Method: $\frac{\$90,000 - \$6,000}{100,000 \text{ hours}} = \$.84$ per hour

Year	2008	20,000 hrs. X $.84 =	$16,800
	2009	25,000 hrs. X $.84 =	21,000
	2010	15,000 hrs. X $.84 =	12,600
	2011	30,000 hrs. X $.84 =	25,200
	2012	10,000 hrs. X $.84 =	8,400

3. Sum-of-the-Years'-Digits: 5 + 4 + 3 + 2 + 1 = 15

Year	2008	5/15 X ($90,000 – $6,000)	=	$28,000
	2009	4/15 X $84,000	=	22,400
	2010	3/15 X $84,000	=	16,800
	2011	2/15 X $84,000	=	11,200
	2012	1/15 X $84,000	=	5,600

4. Double-Declining-Balance Method: Each year is 20% of its total life. Double the rate to 40%.

Year	2008	40% X $90,000	=	$36,000
	2009	40% X ($90,000 – $36,000)	=	21,600
	2010	40% X ($90,000 – $57,600)	=	12,960
	2011	40% X ($90,000 – $70,560)	=	7,776
	2012	Enough to reduce to salvage	=	5,664

PROBLEM 11-7 (Continued)

(b) 1. Straight-line Method:

Year	2008	$\frac{\$90,000 - \$6,000}{5 \text{ years}}$	X 9/12 =	$12,600
	2009	Full year		16,800
	2010	Full year		16,800
	2011	Full year		16,800
	2012	Full year		16,800
	2013	Full year X 3/12 year =		4,200

2. Sum-of-the-Years'-Digits:

2008	(5/15 X $84,000) X 9/12 =		$21,000
2009	(5/15 X $84,000) X 3/12 =	$ 7,000	
	(4/15 X $84,000) X 9/12 =	16,800	23,800
2010	(4/15 X $84,000) X 3/12 =	5,600	
	(3/15 X $84,000) X 9/12 =	12,600	18,200
2011	(3/15 X $84,000) X 3/12 =	4,200	
	(2/15 X $84,000) X 9/12 =	8,400	12,600
2012	(2/15 X $84,000) X 3/12 =	2,800	
	(1/15 X $84,000) X 9/12 =	4,200	7,000
2013	(1/15 X $84,000) X 3/12 =		1,400

PROBLEM 11-7 (Continued)

3. Double-Declining Balance Method:

Year	Cost	Accum. Depr. at beg. of Year	Book Value at beg. of Year	Depr. Expense	
2008	$90,000	—	$90,000	$27,000	(1)
2009	90,000	$27,000	63,000	25,200	(2)
2010	90,000	52,200	37,800	15,120	(3)
2011	90,000	67,320	22,680	9,072	(4)
2012	90,000	76,392	13,608	5,443	(5)
2013	90,000	81,835	8,165	2,165	(6)

(1) $90,000 X 40% X 9/12
(2) ($90,000 – $27,000) X 40%
(3) ($90,000 – $52,200) X 40%
(4) ($90,000 – $67,320) X 40%
(5) ($90,000 – $76,392) X 40%
(6) to reduce to $6,000 salvage value.

PROBLEM 11-8

The straight-line method would provide the highest total net income for financial reporting over the three years, as it reports the lowest total depreciation expense. These computations are provided below.

Computations of depreciation expense and accumulated depreciation under various assumptions:

(1) Straight-line:

$$\frac{\$1,260,000 - \$60,000}{5 \text{ years}} = \$240,000$$

Year	Depreciation Expense	Accumulated Depreciation
2009	$240,000	$ 240,000
2010	240,000	$ 480,000
2011	240,000	$ 720,000
	$720,000	

(2) Double-declining-balance:

Year	Depreciation Expense		Accumulated Depreciation
2009	$504,000	(40% X $1,260,000)	$ 504,000
2010	302,400	(40% X $756,000)	$ 806,400
2011	181,440	(40% X $453,600)	$ 987,840
	$987,840		

(3) Sum-of-the-years'-digits:

Year	Depreciation Expense		Accumulated Depreciation
2009	$400,000	(5/15 X $1,200,000)	$ 400,000
2010	320,000	(4/15 X $1,200,000)	$ 720,000
2011	240,000	(3/15 X $1,200,000)	$ 960,000
	$960,000		

PROBLEM 11-8 (Continued)

(4) Units-of-output:

Year	Depreciation Expense		Accumulated Depreciation
2009	$288,000	($24* X 12,000)	$288,000
2010	264,000	($24 X 11,000)	$552,000
2011	240,000	($24 X 10,000)	$792,000
	$792,000		

*$1,200,000 ÷ 50,000 (total units) = $24 per unit

PROBLEM 11-9

(a) Carrying value of asset: $10,000,000 – $2,500,000* = $7,500,000.

***($10,000,000 ÷ 8) X 2**

Recoverable amount ($5,600,000) < Carrying value ($7,500,000)

Impairment entry:

Loss on Impairment	**1,900,000***	
Accumulated Depreciation—Equipment		**1,900,000**

***$7,500,000 – $5,600,000**

(b)

Depreciation Expense	**1,400,000****	
Accumulated Depreciation—Equipment		**1,400,000**

****($5,600,000 ÷ 4)**

Accumulated Depreciation—Equipment	**700,000**	
Recovery of Impairment Loss		**700,000**

$4,900,000 – ($5,600,000 – $1,400,000)

(c) No depreciation is recorded on impaired assets to be disposed of. Recovery of impairment losses are recorded.

12/31/10	**Loss on Impairment**	**1,900,000**	
	Accumulated Depreciation—Equipment		**1,900,000**
12/31/11	**Loss on Impairment**	**700,000**	
	Accumulated Depreciation—Equipment ($5,600,000 – $4,900,000)		**700,000**

PROBLEM 11-10

Part I

(a) Calculation of the machine's value-in-use at the end of 2010

Year	Future Cash Flows	Present Value Factor	Discounted Cash Flow
2011	$22,165	0.86957	$ 19,274
2012	21,450	0.75614	16,219
2013	20,550	0.65752	13,512
2014	24,725	0.57175	14,137
2015	25,325	0.49718	12,591
2016	24,825	0.43233	10,733
2017	24,123	0.37594	9,069
2018	25,533	0.32690	8,347
2019	24,234	0.28426	6,889
2020	22,850	0.24719	5,648
Value in use			$116,419

The calculation of the impairment loss at the end of 2010 is as follows.

	Machine
Carrying amount before impairment loss	$150,000
Recoverable amount (value-in-use)	(116,419)
Impairment loss	$ 33,581

(b) December 31, 2010

Loss on Impairment	33,581	
Accumulated Depreciation—Machine		33,581

PROBLEM 11-10 (Continued)

Part II

(c) Revised Cash Flows

Year	Future Cash Flows	Present Value Factor 14%	Discounted Cash Flow
2015	$30,321	.66,451	$ 26,364
2016	32,750	.75,614	24,764
2017	31,721	.65,752	20,857
2018	31,950	.57,175	18,267
2019	33,100	.49,718	16,457
2020	27,999	.43,233	12,105
Value-in-use			$118,814

Calculation of the reversal of the impairment loss at the end of 2014

Carrying amount at the end of 2010 (Part I).....		$116,419
Depreciation charge: 2011 to 2014 [($116,419/10) X 4].....		(46,568)
Costs to enhance the asset's performance.....		25,000
Carrying amount before reversal		$ 94,851
A—Recoverable amount (Value-in-use).....		$118,814
B—Carrying amount based on depreciated historical cost.....		$115,000*

*Original cost.....	$150,000	
Accumulated depreciation based on historical cost ($15,000 X 4)	(60,000)	
Costs to enhance.....	25,000	
	$115,000	

Carrying amount after reversal—lower of A, B: $115,000

Reversal of the impairment loss $20,149 ($115,000 – $94,851) is recorded as follows.

Accumulated Depreciation—Machine	20,149	
Recovery of Impairment Loss		20,149

PROBLEM 11-11

(a) Cost per barrel: (£1,200,000 + £50,000) ÷ 500,000 = £2.5/barrel

(b)

Sales (36,000 X £65)		**£2,340,000**
Expenses:		
Depletion (36,000 X £2.5)	**£90,000**	
Premium Payment (£2,340,000 X .04)	**93,600**	
Annual rental	**62,000**	**245,600**
Current year profit		**£2,094,400**

(c) Phelps has a choice on how to account for its exploration and evaluation costs. It can either write off these costs as incurred or capitalize them pending evaluation.

PROBLEM 11-12

(a) Estimated depletion:

Depletion Base	Estimated Yield	Estimated Depletion Per Ton	Estimated Depletion 1ST & 11th Yrs.	Estimated Depletion Each of Yrs. 2-10 Incl.
$870,000*	120,000 tons	$7.25	$43,500**	$87,000***

*($900,000 – $30,000)
**($7.25 X 6,000)
***($7.25 X 12,000)

Estimated depreciation:

Asset	Cost	Per ton Mined	1st Yr.	Yrs. 2–5	6th Yr.	Yrs. 7–10	11th Yr.
Building	$36,000	$.30*	$1,800	$3,600	$3,600	$3,600	$1,800
Machinery (1/2)	30,000	.25**	1,500	3,000	3,000	3,000	1,500
Machinery (1/2)	30,000	.50***	3,000	6,000	3,000	0	0

*$36,000 ÷ 120,000 = $.30
**$30,000 ÷ 120,000 = $.25
***($30,000 ÷ 120,000) X 2 = $.50

(b) Depletion: $7.25 X 5,000 tons = $36,250

Depreciation:	Building	$.30 X 5,000 =	$1,500
	Machinery	$.25 X 5,000 =	1,250
	Machinery	$.50 X 5,000 =	2,500
	Total depreciation		$5,250

*PROBLEM 11-13

(a)

December 31, 2009		
Land ($215,000 – $200,000)	15,000	
Unrealized Gain on Revaluation—Land		15,000

(b)

	Dec. 31, 2010	Dec. 31, 2011
Land	$185,000	$205,000
Other Comprehensive Income	(15,000)	5,000
Impairment Loss	(15,000)	15,000
Accumulated Other Comprehensive Income	—	5,000

(c)

December 31, 2010		
Unrealized Gain on Revaluation—Land	15,000	
Loss on Impairment	15,000	
Land ($215,000 – $185,000)		30,000
December 31, 2011		
Land ($205,000 – $185,000)	20,000	
Recovery of Impairment Loss		15,000
Unrealized Gain on Revaluation—Land		5,000

(d)

January 15, 2012		
Cash	220,000	
Land		205,000
Gain on Disposal of Land		15,000
Accumulated Other Comprehensive Income	5,000	
Retained Earnings		5,000

*PROBLEM 11-14

(a) **January 2, 2010**

Equipment	500,000	
Cash		500,000

December 31, 2010

Depreciation Expense (€500,000 ÷ 10)	50,000	
Accumulated Depreciation—Equipment		50,000
Accumulated Depreciation—Equipment	50,000	
Equipment (€500,000 – €468,000)		32,000
Unrealized Gain on Revaluation—Equipment		18,000

(b)

	Dec. 31, 2011	Dec. 31, 2012
Equipment	€380,000	€315,000
Other Comprehensive Income	(16,000)	2,500
Depreciation Expense	52,000	47,500
Impairment Loss	20,000	(20,000)
Accumulated Other Comprehensive Income	(0)	5,000

(c) **December 31, 2011**

Depreciation Expense (€468,000 ÷ 9)	52,000	
Accumulated Depreciation—Equipment		52,000
Accumulated Other Comprehensive Income	2,000	
Retained Earnings (€52,000 – €50,000)		2,000
Accumulated Depreciation	52,000	
Unrealized Gain on Revaluation—Equipment	16,000	
Loss on Impairment (€400,000 – €380,000)	20,000	
Equipment (€468,000 – €380,000)		88,000

***PROBLEM 11-14 (Continued)**

(c) **December 31, 2012**

Depreciation Expense (€380,000 ÷ 8)	47,500	
Accumulated Depreciation—Equipment		47,500
Retained Earnings (€50,000 – €47,500)	2,500	
Accumulated Other Comprehensive Income		2,500
Accumulated Depreciation—Equipment	47,500	
Recovery of Impairment Loss		20,000
Unrealized Gain on Revaluation		2,500
Equipment (€380,000 – €355,000)		25,000

(d) **December 31, 2013**

Cash	330,000	
Loss on Disposal of Equipment	25,000	
Equipment		355,000
Accumulated Other Comprehensive Income	5,000	
Retained Earnings		5,000

TIME AND PURPOSE OF CONCEPTS FOR ANALYSIS

CA 11-1 (Time 25–35 minutes)
Purpose—to provide the student with an understanding of the basic objective of depreciation accounting. In addition, the case involves a reverse sum-of-the-years'-digits situation and the student is to comment on the propriety of such an approach. Finally, the classic issue of whether depreciation provides funds must be considered. The tax effects of depreciation must be considered when this part of the case is examined. An excellent case for covering the traditional issues involving depreciation accounting.

CA 11-2 (Time 25–35 minutes)
Purpose—to provide the student with an understanding of a number of unstructured situations involving depreciation accounting. The first situation considers whether depreciation should be recorded during a strike. The second situation involves the propriety of employing the units-of-production method in certain situations. The third situation involves the step-up of depreciation charges because properties are to be replaced due to obsolescence. The case is somewhat ambiguous, so cut-and-dried approaches should be discouraged.

CA 11-3 (Time 25–35 minutes)
Purpose—to provide the student with an understanding of the objectives of depreciation and the theoretical basis for accelerated depreciation methods.

CA 11-4 (Time 20–25 minutes)
Purpose—to provide the student with the opportunity to examine the ethical dimensions of the depreciation method choice.

SOLUTIONS TO CONCEPTS FOR ANALYSIS

CA 11-1

(a) The purpose of depreciation is to distribute the cost (or other book value) of tangible plant assets, less residual value, over their useful lives in a systematic and rational manner. Under IFRS, depreciation accounting is a process of allocation, not of valuation, through which the productive effort (cost) is to be matched with productive accomplishment (revenue) for the period. Depreciation accounting, therefore, is concerned with the timing of the expiration of the cost of tangible plant assets.

(b) The proposed depreciation method is, of course, systematic. Whether it is rational in terms of cost allocation depends on the facts of the case. It produces an increasing depreciation charge, which is usually not justifiable in terms of the benefit from the use of the asset because manufacturers typically prefer to use their new equipment as much as possible and their old equipment only as needed to meet production quotas during periods of peak demand. As a general rule, then, the benefit declines with age. Assuming that the actual operations (including equipment usage) of each year are identical, maintenance and repair costs are likely to be higher in the later years of usage than in the earlier years. Hence the proposed method would couple light depreciation and repair charges in the early years. Reported net income in the early years would be much higher than reported net income in the later years of asset life, an unreasonable and undesirable variation during periods of identical operation.

On the other hand, if the expected level of operations (including equipment usage) in the early years of asset life is expected to be low as compared to that of later years because of slack demand or production policies, the pattern of the depreciation charges of the proposed method approximately parallels expected benefits (and revenues) and hence is reasonable. Although the units-of-production depreciation method is the usual selection to fit this case, the proposed method also conforms to IFRS in this case provided that proper justification is given.

(c) (1) Depreciation charges neither recover nor create funds. Revenue-producing activities are the sources of funds from operations: if revenues exceed out-of-pocket costs during a fiscal period, funds are available to cover other than out-of-pocket costs; if revenues do not exceed out-of-pocket costs, no funds are made available no matter how much, or little, depreciation is charged.

(2) Depreciation may affect funds in two ways. First, depreciation charges affect reported income and hence may affect managerial decisions such as those regarding pricing, product selection, and dividends. For example, the proposed method would result initially in higher reported income than would the straight-line method, consequently shareholders might demand higher dividends in the earlier years than they would otherwise expect.

The straight-line method, by causing a lower reported income during the early years of asset life and thereby reducing the amount of possible dividends in early years as compared with the proposed method, could encourage earlier reinvestments in other profit-earning assets in order to meet increasing demand.

CA 11-1 (Continued)

Second, depreciation charges affect reported taxable income and hence affect directly the amount of income taxes payable in the year of deduction.

Using the proposed method for tax purposes would reduce the total tax bill over the life of the assets (1) if the tax rates were increased in future years or (2) if the business were doing poorly now but were to do significantly better in the future. The first condition is political and speculative but the second condition may be applicable to Burnitz Manufacturing Company in view of its recent origin and its rapid expansion program. Consequently, more funds might be available for reinvestment in plant assets in years of large deductions if one of the above assumptions were true.

If Burnitz is not profitable now, it would not benefit from higher deductions now and should consider an increasing charge method for tax purposes, such as the one proposed. If Burnitz is quite profitable now, the president should reconsider his proposal because it will delay the availability of the tax shield provided by depreciation. However, this decision should not affect the decision to use a depreciation method for shareholders' reporting that is systematic and rational in terms of cost allocation under IFRS as presently understood.

CA 11-2

Situation I. This position relates to the omission of a provision for depreciation during a strike. The same question could be raised with respect to plant shut-downs for many reasons, such as for a lack of sales or for seasonal business.

The method of depreciation used should be systematic and rational. The annual provision for depreciation should represent a fair estimate of the loss in value arising from wear and usage and also from obsolescence. Each company should analyze its own facts and establish the best method under the circumstances. If the company was employing a straight-line depreciation method, for example, it is inappropriate to stop depreciating the plant asset during the strike.

If the company employs a units-of-production method, however, it would be appropriate not to depreciate the asset during this period. Even in this latter case, however, if the strike were prolonged, it might be desirable to record some depreciation because of the obsolescence factors related to the passage of time.

Situation II. (a) Steady demand for the new blenders suggests use of the straight-line method or the units-of-production method, either of which will allocate cost evenly over the life of the machine. Decreasing demand indicates use of an accelerated method (declining-balance or sum-of-the-years'-digits) or the units-of-production method in order to allocate more of the cost to the earlier years of the machine's life. Increasing demand indicates the use of the units-of-production method to charge more of the cost to the later years of the machine's life.

CA 11-2 (Continued)

(b) In determining the depreciation method to be used for the machine, the objective should be to allocate the cost of the machine over its useful life in a systematic and rational manner, so that costs will be matched with the benefits expected to be obtained. In addition to demand, consideration should be given to the items discussed below, their interrelationships, the relative importance of each, and the degree of certainty with which each can be predicted:

The expected pattern of costs of repairs and maintenance should be considered. Costs which vary with use of the machine may suggest the use of the units-of-production method. Costs which are expected to be equal from period to period suggest the use of the straight-line method. If costs are expected to increase with the age of the machine, an accelerated method may be considered reasonable because it will tend to equalize total expenses from period to period.

The operating efficiency of the machine may change with its age. A decrease in operating efficiency may cause increases in such costs as labor and power; if so, an accelerated method is indicated. If operating efficiency is not expected to decline, the straight-line method is indicated.

Another consideration is the expiration of the physical life of the machine. If the machine wears out in relation to the passage of time, the straight-line method is indicated. Within this maximum life, if the usage per period varies, the units-of-production method may be appropriate.

The machine may become obsolete because of technological innovation; it may someday be more efficient to replace the machine even though it is far from worn out. If the probability is high that such obsolescence will occur in the near future, the shortened economic life should be recognized. Within this shortened life, the depreciation method used would be determined by evaluating such consideration as the anticipated periodic usage.

An example of the interrelationship of the items discussed above is the effect of the repairs and maintenance policy on operating efficiency and physical life of the machine. For instance, if only minimal repairs and maintenance are undertaken, efficiency may decrease rapidly and life may be short.

It is possible that different considerations may indicate different depreciation methods for the machine. If so, a choice must be made based on the relative importance of the considerations. For instance, physical life may be less important than the strong chance of technological obsolescence which would result in a shorter economic life.

Situation III. Depreciation rates should be adjusted in order that the operating sawmills which are to be replaced will be depreciated to their residual value by the time the new facility becomes available. The step-up in the depreciation rates should be considered as a change in estimate and prior years' financial statements should not be adjusted.

The idle mill should be written off immediately as it appears to have no future service potential.

CA 11-3

To: Phil Perriman, Supervisor of Canning Room

From: Your name, Accountant

Date: January 22, 2010

Subject: Annual depreciation charge to the canning department

This memo addresses the questions you asked about the depreciation charge against your department. Admittedly this charge of $625,000 is very high; however, it is not intended to reflect the wear and tear which the machinery has undergone over the last year. Rather, it is a portion of the machines' cost which has been allocated to this period.

Depreciation is frequently thought to reflect an asset's loss in value over time. For financial statement purposes, however, depreciation allocates part of an asset's cost in a systematic way to each period during its useful life. Although there will always be a decline in an asset's value over time, the depreciation charge is not supposed to measure that decline; instead, it is a periodic "charge" for using purchased equipment during any given period. When you consider the effect which the alternative would have on your departmental costs—expensing the total cost for all six machines this year—is more equitable.

You also mentioned that using straight-line depreciation would result in a smaller charge than would the current double-declining-balance method. This is true during the first years of the equipment's life. Straight-line depreciation expenses even amounts of depreciation for each canning machine's twelve-year life. Thus the straight-line charge for this and all subsequent years would be $47,500 per machine for total annual depreciation of $285,000.

During the earlier years of an asset's life, the double-declining-balance method results in higher depreciation charges because it doubles the charge which would have been made under the straight-line method. However, the same percentage depreciation in the first year is applied annually to the asset's declining book value. Therefore, the double-declining-balance charge becomes lower than the straight-line charge during the last several years of the asset's life. For this year, as mentioned above, the charge is $625,000, but in subsequent years this expense will become lower. By the end of the twelfth year, the same amount of depreciation will have been taken regardless of the method used.

The straight-line method would result in fewer charges against your department this year. However, consider this: when the asset is new, additional costs for service and repairs are minimal. Thus a greater part of the asset's cost should be allocated to this optimal portion of the asset's life. After a few years, your department will have to absorb the additional burden of repair and maintenance costs. During that time, wouldn't you rather have a lower depreciation charge?

I hope that this explanation helps clarify any questions which you may have had about depreciation charges to your department.

CA 11-4

(a) The stakeholders are Beeler's employees, including Prior, current and potential investors and creditors, and upper-level management.

(b) The ethical issues are honesty and integrity in financial reporting, job security, and the external users' right to know the financial picture.

(c) Prior should review the estimated useful lives and residual values of the depreciable assets. Since they are estimates, it is possible that some *should be* changed. Any changes should be based on sound, objective information without concern for the effect on the financial statements (or anyone's job).

(Note: This case can be used with Chapter 22, Accounting Changes and Error Analysis.)

FINANCIAL REPORTING PROBLEM

(a) M&S classifies its property, plant and equipment under three descriptions in its balance sheet: Property, Plant, and Equipment.

(b) M&S's depreciation is provided to write off the cost of tangible non-current assets by equal annual installments (straight-line method).

(c) M&S depreciates freehold and leasehold buildings with a remaining lease term over 50 years; leasehold buildings with a remaining lease term of less than 50 years; and fixtures, fittings and equipment over 3 to 25 years.

(d) M&S's Notes report depreciation expense of £296.3 million in 2008 and £268.8 million in 2007, and amortization expense of £21.3 million in 2008 and £14.2 in 2007.

(e) The statement of cash flows reports the following capital expenditures: 2008, £924.6 million and 2007, £712.8 million.

COMPARATIVE ANALYSIS CASE

(a) Property, plant, and equipment, net of accumulated depreciation:

Cadbury at 12/31/08	£1,761 million
Nestlé at 12/31/08	CHF21,097 million

Percent of total assets:

Cadbury (£1,761 ÷ £8,895)	19.8%
Nestlé (CHF21,097 ÷ CHF106,215)	19.9%

(b) Cadbury and Nestlé depreciate property, plant, and equipment principally by the straight-line method over the estimated useful lives of the assets. Depreciation expense was reported by Cadbury and Nestlé as follows:

	Cadbury	Nestlé
2008	£194 million	CHF2,625 million
2007	213 million	2,620 million

(c) (1) Asset turnover:

Cadbury	Nestlé
$\dfrac{£5{,}384}{\dfrac{£11{,}338 + £8{,}895}{2}} = .53$	$\dfrac{CHF109{,}908}{\dfrac{CHF115{,}361 + CHF106{,}215}{2}} = .99$

COMPARATIVE ANALYSIS CASE (Continued)

(2) Profit margin:

Cadbury	Nestlé
$\frac{£487}{£5,384} = 9.0\%$	$\frac{CHF19,051}{CHF109,908} = 17.3\%$

(3) Rate of return on assets:

Cadbury	Nestlé
$\frac{£487}{\frac{£11,338 + £8,895}{2}} = 4.8\%$	$\frac{CHF19,051}{\frac{CHF115,361 + CHF106,215}{2}} = 17.2\%$

Each of Nestlé's ratios is superior to Cadbury's, especially the rate of return on assets. Nestlé's profit margin is almost twice as high as Cadbury's.

(d) Cadbury's capital expenditures were £500 million in 2008 while Nestlé's capital expenditures were CHF4,869 million in 2008.

Neither Cadbury nor Nestlé capitalized any interest in 2008 because IFRS did not require capitalizing interest until January 1, 2009.

FINANCIAL STATEMENT ANALYSIS CASE

(a) Carrefour used the straight-line method for depreciating its tangible fixed assets.

(b) Depreciation and amortization charges do not increase cash flow from operations. In a cash flow statement, these two items are often added back to net income to arrive at cash flow from operations and therefore some incorrectly conclude these expenses increase cash flow. What affects cash flow from operations are cash revenues and cash expenses. Noncash charges have no effect, except for positive tax savings generated by these charges.

(c) The schedule of cash flow measures indicates that cash provided by operations is expected to cover capital expenditures over the next few years, even as expansion continues to accelerate. It is obvious that Carrefour's believes that cash flow measures are meaningful indicators of growth and financial strength, when evaluated in the context of absolute dollars or percentages.

ACCOUNTING

(amounts in €000,000)

(a) Book value = €36 – €10 = €26

Estimated fair value = (€4 X PVF – $OA_{4.5\%}$)
= (€4 X 3.54595)
= €14.1838

Impairment charge = €26 – €14.1838 = €11.8162

Post-impairment book value = €14.1838

(b) €2.72 X 7.3609 = €20,01944
Impairment = €26 – €20,01944 = €5.98056.

ANALYSIS

If the stores are in the process of being sold, they would likely be considered 'held for sale' for financial reporting purposes. If they are held for sale, the impairment test is based on the discounted cash flows, instead of undiscounted. Essentially, it is a lower-of-cost-or net realizable value approach.

Estimated fair value = ($2.72 X PVF – $OA_{10.6\%}$)
= ($2.72 X 7.36009)
= 20.01944

Therefore, Electroboy will need to write the stores down to $20.01944 from $26.0. Plant asset write-downs are a little more likely when management intends to sell the assets.

PRINCIPLES

(a) Under IFRS, there can be a recovery of impairment loss, as long as the recovery amount is limited to the amount of the original impairment.

***(b) The major differences between U.S. GAAP and IFRS regarding impairments are as follows. First, IFRS determines the need for an impairment charge by comparing the recoverable amount (the higher of value-in-use and fair value less costs to sell) of the asset to its book value instead of comparing undiscounted estimated future cash flows to book value. This potentially makes impairment charges more likely under IFRS than U.S. GAAP. Second, under IFRS, companies may write a previously impaired asset back up to its original cost. Under U.S. GAAP, the post-impairment book value can not be increased due to an increase in the fair value of the previously impaired asset. Thus, IFRS may provide a more faithful presentation but could be less neutral due to the subjectivity in value-in-use measurements.**

INTERNATIONAL REPORTING CASE

		Liberty	Kimco
(a)	(1) ROA	£125 / £5,577 = 2.2%	$297 / $4,696 = 6.32%
	(2) Profit Margin	£125 / £741 = 16.9%	$297 / $517 = 57.4%
	(3) Asset Turnover	£741 / £5,577 = .13	$517 / $4,696 = .11

Based on return on assets (ROA), Kimco is performing better than Liberty. The main driver for this difference is strong profit margin, which is over three times that of Liberty. Even though Liberty has a higher asset turnover (.13 vs. .11), this results in only a 2.2% ROA when multiplied by the lower profit margin.

(b) **Summary Entry**

Land and Buildings	1,550	
Unrealized Gain on Revaluation		1,550

(c) **Relative to U.S. GAAP, an argument can be made that assets and equity are overstated. Note that in the entry in (b) above, the revaluation adjustment increases Liberty's asset values and equity. To make Liberty's reported numbers comparable to a U.S. company like Kimco, you would need to adjust Liberty's assets and equity numbers downward by the amount of the unrealized gain.**

For example, after adjusting Liberty's assets downward by the amount of the unrealized gain, Liberty's ROA increases to:

$$\frac{\$125}{(\$5{,}577 - \$1{,}952)} = 3.45\%.$$

This is still lower than Kimco's ROA but the gap is narrower after adjusting for differences in revaluation.

Note to instructors: An alternative way to make Liberty and Kimco comparable is to adjust Kimco's assets to fair values. This approach could be used to discuss the trade-off between relevance and faithful representation.

PROFESSIONAL RESEARCH

(a) The authoritative guidance for asset impairments is IAS 36: Impairment of Assets. This Standard shall be applied in accounting for the impairment of all assets, other than:

a. inventories;
b. assets arising from construction contracts;
c. deferred tax assets;
d. assets arising from employee benefits;
e. financial assets that are within the scope of IAS 39 *Financial Instruments: Recognition and Measurement*;
f. investment property that is measured at fair value;
g. biological assets related to agricultural activity that are measured at fair value less costs to sell;
h. deferred acquisition costs, and intangible assets, arising from an insurer's contractual rights under insurance contracts within the scope of IFRS 4 Insurance Contracts; and
i. non-current assets (or disposal groups) classified as held for sale in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations* (para. 2).

This Standard applies to financial assets classified as:

a. subsidiaries, as defined in IAS 27 *Consolidated and Separate Financial Statements*;
b. associates, as defined in IAS 28 Investments in Associates; and
c. joint ventures, as defined in IAS 31 *Interests in Joint Ventures*.

For impairment of other financial assets, refer to IAS 39 (para. 4).

(b) In assessing whether there is any indication that an asset may be impaired, an entry shall consider, as a minimum, the following indications. (para. 12):

External sources of information

a. during the period, an asset's market value has declined significantly more than would be expected as a result of the passage of time or normal use.
b. significant changes with an adverse effect on the entity have taken place during the period, or will take place in the near future, in the technological, market, economic or legal environment in which the entity operates or in the market to which an asset is dedicated.
c. market interest rates or other market rates of return on investments have increased during the period, and those increases are likely to affect the discount rate used in calculating an asset's value in use and decrease the asset's recoverable amount materially.
d. the carrying amount of the net assets of the entity is more than its market capitalisation.

Internal sources of information

e. evidence is available of obsolescence or physical damage of an asset.
f. significant changes with an adverse effect on the entity have taken place during the period, or are expected to take place in the near future, in the extent to which, or manner in which, an asset is used or is expected to be used. These changes include the asset becoming idle, plans to discontinue or restructure the operation to which an asset belongs, plans to dispose of an asset before the previously expected date, and reassessing the useful life of an asset as finite rather than indefinite.
g. evidence is available from internal reporting that indicates that the economic performance of an asset is, or will be, worse than expected.

Dividend from a subsidiary, jointly controlled entity or associate

h. for an investment in a subsidiary, jointly controlled entity or associate, the investor recognizes a dividend from the investment and evidence is available that:
   (i) the carrying amount of the investment in the separate financial statements exceeds the carrying amounts in the consolidated financial statements of the investee's net assets, including associated goodwill; or
   (ii) the dividend exceeds the total comprehensive income of the subsidiary, jointly controlled entity or associate in the period the dividend is declared.

The list in paragraph 12 is not exhaustive. An entity may identify other indications that an asset may be impaired and these would also require the entity to determine the asset's recoverable amount or, in the case of goodwill, perform an impairment test in accordance with paragraphs 80–99 (para. 13).

Evidence from internal reporting that indicates that an asset may be impaired includes the existence of:

a. cash flows for acquiring the asset, or subsequent cash needs for operating or maintaining it, that are significantly higher than those originally budgeted;
b. actual net cash flows or operating profit or loss flowing from the asset that are significantly worse than those budgeted;
c. a significant decline in budgeted net cash flows or operating profit, or a significant increase in budgeted loss, flowing from the asset; or
d. operating losses or net cash outflows for the asset, when current period amounts are aggregated with budgeted amounts for the future. (para. 14)

Yes, it does appear that Klax should perform an impairment test because market value of assets are most likely lower than current carrying value.

(c) Different situations may lead to best evidence of fair value (i.e. could be market value, revalued asset, etc.).

a. if the asset's fair value is its market value, the only difference between the asset's fair value and its fair value less costs to sell is the direct incremental costs to dispose of the asset:

(i) if the disposal costs are negligible, the recoverable amount of the revalued asset is necessarily close to, or greater than, its revalued amount (i.e., fair value). In this case, after the revaluation requirements have been applied, it is unlikely that the revalued asset is impaired and recoverable amount need not be estimated.

(ii) if the disposal costs are not negligible, the fair value less costs to sell of the revalued asset is necessarily less than its fair value. Therefore, the revalued asset will be impaired if its value in use is less than its revalued amount (i.e., fair value). In this case, after the revaluation requirements have been applied, an entity applies this Standard to determine whether the asset may be impaired.

b. if the asset's fair value is determined on a basis other than its market value, its revalued amount (i.e., fair value) may be greater or lower than its recoverable amount. Hence, after the revaluation requirements have been applied, an entity applies this Standard to determine whether the asset may be impaired (para. 5).

Explanation

(a) The purpose of depreciation is to allocate the cost (or other book value) of tangible plant assets, less residual value, over their useful lives in a systematic and rational manner. Under IFRS, depreciation accounting is a process of allocation, not of valuation, through which the productive effort (cost) is to be matched with productive accomplishment (revenue) for the period. Depreciation accounting, therefore, is concerned with the timing of the expiration of the cost of tangible plant assets.

(b) The factors relevant in determining the annual depreciation for a depreciable asset are the initial recorded amount (cost), estimated residual value, estimated useful life, and depreciation method.

Assets are typically recorded at their acquisition cost, which is in most cases objectively determinable. Cost assignments in other cases—"basket purchases" and the selection of an implicit interest rate in an asset acquisitions or under deferred-payment plans—may be quite subjective, involving considerable judgment.

The residual value is an estimate of an amount potentially realizable when the asset is retired from service. The estimate is based on judgment and is affected by the length of the useful life of the asset.

The useful life is also based on judgment. It involves selecting the "unit" of measure of service life and estimating the number of such units embodied in the asset. Such units may be measured in terms of time periods or in terms of activity (for example, years or machine hours). When selecting the life, one should select the lower (shorter) of the physical life or the economic life. Physical life involves wear and tear and casualties; economic life involves such things as technological obsolescence and inadequacy.

PROFESSIONAL SIMULATION (Continued)

Measurement

(a) Compared to the use of an accelerated method, straight-line depreciation would result in the lowest depreciation expense and the highest income. For example, under straight-line depreciation, expense in each year would be:

($100,000 – $10,000)/4 = $22,500

Using the double-declining-balance method, depreciation expense in 2010 would be:

$100,000 X (1/4 X 2) = $50,000

Depending on the level of use in the first year, use of the units-of-production method could yield an even lower expense in the first year compared to straight-line.

(b) Over the entire four-year period, all methods will produce the same total depreciation expense. Use of alternative methods only results in differences in timing of the depreciation charges.

(c) All methods used for financial reporting purposes results in the same cash flow in 2010—that is, a cash outflow of $100,000 for acquisition of the machine. However, use of an accelerated method for tax purposes results in the higher cash flow in 2010. This is because a larger tax deduction can be taken for depreciation expense, which reduces taxable income, resulting in less cash paid for taxes. Note that over the life of the asset, cash flows for taxes are the same regardless of the tax depreciation method used.

Journal Entry

Cash	**84,000**	
Accumulated Depreciation	**45,000***	
Gain on Sale of Equipment		**29,000**
Equipment		**100,000**

***($100,000 – $10,000)/4 = $22,500 per year X 2 years (2010, 2011)**