

CHAPTER 10

LONG-LIVED TANGIBLE AND INTANGIBLE ASSETS

Questions, Exercises, and Problems: Answers and Solutions

- 10.1 See the text or the glossary at the end of the book.
- 10.2 The central concept underlying GAAP for these three items is the ability to identify and reliably measure expected future benefits. The self-constructed building has physical substance and the accountant can observe the effect of an expenditure on the physical structure of the building. The building provides evidence of future benefits. Research and development (R&D) expenditures may give rise to an intangible, such as a patent on a new technology. The accountant cannot, however, observe the physical creation of an asset with future benefits when a firm makes R&D expenditures. Thus, reliably identifying and measuring future benefits is problematic. U.S. GAAP does not permit recognition of an asset for research and development expenditures. Expenditures on software development present an in-between case. The programming underlying the software is embedded in a computer but the accountant can observe how well the software works. When the software has not yet reached the stage of technological feasibility, future benefits are uncertain. Thus, U.S. GAAP treats expenditures up to this point as expenses of the period when incurred. When software reaches the point of technological feasibility, future benefits become more certain. U.S. GAAP, therefore, permits firms to capitalize software development expenditures after this point.
- 10.3 The central concept underlying U.S. GAAP for these three items is the ability to identify and reliably measure expected future benefits. Expenditures to research new drugs may give rise to future benefits, but identifying the existence of those future benefits while research progresses is problematic. Thus, U.S. GAAP requires immediate expensing of research and development expenditures. The external market transaction for a patent on a new drug validates both the existence and fair value of the patent. U.S. GAAP, therefore, recognizes the patent as an asset. In-process R&D has characteristics of the previous two cases. Whether the in-process project will yield future benefits is uncertain, suggesting that firms

10.3 continued.

should expense such expenditures at the time of acquisition. An external market transaction between independent parties suggests the existence of future benefits, supporting recognition of an asset until such time as the status of the research project becomes more certain. FASB *Statement No. 141 (Revised)* requires firms to recognize as an asset the fair value of in-process R&D acquired in a corporate acquisition, placing greater weight on the evidence provided by the external market transaction than on the uncertainty of future benefits.

- 10.4 Over the life of the project, income is the same regardless of whether the firm capitalizes interest or expenses it. Capitalizing and then amortizing interest versus expensing it affects the timing but not the total amount of income. Capitalizing interest defers expense from the construction period to the periods of use. This increases income in the years of construction and decreases it in the periods of use. In periods of use, depreciation charges are larger.
- 10.5 A long-lived asset with a finite life is expected to provide benefits for a limited amount of time. Benefits will eventually decline to zero, either because of physical use, obsolescence, or disposal. Firms depreciate or amortize assets with finite lives. Note that firms must estimate the finite life in most cases. U.S. GAAP and IFRS treat assets that have an extended life, but for which the length of that life is highly uncertain, as having an indefinite life. U.S. GAAP and IFRS do not require firms to depreciate or amortize assets with an indefinite life. U.S. GAAP and IFRS require that these assets—in fact, all long-lived assets—be tested annually for possible asset impairment.
- 10.6 Thames must demonstrate that the brand names amortized have a finite life and those not amortized have an indefinite life. Thames would examine the age of particular brand names, the pace at which brand names come in and out of favor in a particular industry, and similar factors in deciding the classification of a particular brand name acquired. This process likely involves considerable subjectivity, but it is subject to audit by the Thames independent accountant.

- 10.7 The treatment of this change in depreciable life would depend on the reason for and the materiality of the change. The change in this case appears prompted by new governmental regulations imposed on the airline industry. If the change in expected life is material, the firm can make a case for recognizing an asset impairment loss and revising its depreciation going forward. If the impact is not material, the airline might treat the change in depreciable life as a change in an estimate and spread the effect of the change over the current and future years. The purpose of this question is to demonstrate that judgments are often required in applying authoritative guidance.
- 10.8 The relevant question to apply authoritative guidance is whether the expenditure maintained the originally expected useful life or extended that useful life. Firms should expense, as maintenance or repairs, expenditures that maintain the originally expected five-year life. In this case, the expenditure both maintains and extends the useful life. A portion of the expenditure should appear as an expense immediately (perhaps two-thirds) and a portion (perhaps one-third) should increase the depreciable base for the asset. The portion of the expenditure treated as an asset would be based on the extent to which the expenditure increased the useful life.
- 10.9 U.S. GAAP compares the undiscounted cash flows from an asset to its carrying value to determine if an impairment loss has occurred. The rationale is that an impairment loss has not occurred if a firm will receive cash flows in the future at least equal to the carrying value of the asset. Receiving such cash flows will permit the firm to recover the carrying value. This criterion ignores the time value of money. Cash received earlier has more economic value than cash received later, but this criterion ignores such differences.
- 10.10 The cash recoverability criterion requires firms to estimate the expected undiscounted cash flows. This estimate requires projection of cash flows for a specified number of periods. Non-amortized intangibles have an indefinite life. For indefinite lived assets, it is not possible to project the total undiscounted cash flows because it is not possible to discern when the forecasted cash flows stop.

- 10.11 An asset impairment loss that arises during a period results from a decline in fair value due to some external event. Fair values are based on discounted cash flows, not undiscounted cash flows. Therefore, using undiscounted cash flows to signal an impairment loss ignores the actual decline in fair value that occurred. Firms will not recognize the asset impairment loss as long as the undiscounted cash flows exceed the carrying value of the asset.
- 10.12 The excess purchase price will affect net income if and when the firm recognizes a goodwill impairment loss. A goodwill impairment loss results when the acquirer will not recover the carrying amount of the purchased goodwill. Firms must test goodwill annually for possible impairment. Management might, however, operate the acquired entity in such a way that its value increases over time, thereby offsetting the effect of any initial overpayment.
- 10.13 (Outback Steakhouse; calculating acquisition costs of long-lived assets.) (amounts in US\$)

The relative market values of the land and building are 20% (= \$52,000/\$260,000) for the land and 80% (= \$208,000/\$260,000) for the building. We use these percentages to allocate the combined \$260,000 cost of the land and building.

	Land	Building
Purchase Price of Land and Building	\$ 52,000	\$ 208,000
Legal Costs Split 20% and 80%	2,520	10,080
Renovation Costs	—	35,900
Property and Liability Insurance Costs During Renovation Split 20% and 80%	800	3,200
Property Taxes During Renovation Split 20% and 80%	<u>1,000</u>	<u>4,000</u>
Total	<u>\$ 56,320</u>	<u>\$ 261,180</u>

Note: One might argue that the split of the insurance and property taxes should recognize the increase in market value of the building as a result of the renovation and use some other percentages besides 20% and 80%. Note also that the insurance and property taxes for the period after opening are expenses of the first year of operation.

- 10.14 (Classifying expenditure as asset or expense. These solutions apply U.S. GAAP.)
- a. (3) Expense.
 - b. (3) Expense.
 - c. (3) Expense.
 - d. (1) Noncurrent asset (machine).
 - e. (3) Expense.
 - f. (3) Expense.
 - g. (2) Current asset (inventory).
 - h. (1) Noncurrent asset (equipment).
 - i. (3) Expense.
 - j. (1) Noncurrent asset (ore deposit).
 - k. (1) Current asset (prepayment).
 - l. (1) Current asset (marketable securities).
 - m. (2) Current asset product cost (inventories).
 - n. (1) Noncurrent asset (trademark).
 - o. (1) Noncurrent asset (copyright).
 - p. (1) Noncurrent asset (computer software).
 - q. (3) Expense. Acquired in-process research and development (IPR&D) is recognized as an asset when the item is acquired as part of a business combination.

10.15 (Bolton Company; cost of self-constructed assets.) (amounts in US\$)

Land: $\$70,000 + \$2,000$ (14) = $\$72,000$.

Factory Building: $\$200,000$ (1) + $\$12,000$ (2) + $\$140,000$ (3) + $\$6,000$ (5) – $\$7,000$ (7) + $\$10,000$ (8) + $\$8,000$ (9) + $\$3,000^a$ (10) + $\$8,000$ (11) + $\$4,000$ (13) + $\$1,000^a$ (15) = $\$385,000$.

Office Building: $\$20,000 + \$13,000$ (4) = $\$33,000$.

Site Improvements: $\$5,000$ (12).

^aThe firm might expense these items. It depends on the rationality of the firm's "self-insurance" policy.

Item (6) is omitted because firms may not recognize opportunity costs in financial reports.

Item (16) is omitted because no arm's length transaction occurred in which the firm earned a profit.

10.16 (Duck Vehicle Manufacturing Company; cost of self-developed product.)

The first four items qualify as research and development costs which, under U.S. GAAP, the firm must expense in the year incurred. It might appear that the firm should capitalize the cost of the prototype because it acquires the prototype from an external contractor. Completion of a prototype does not, however, signify a viable product. Purchasing the prototype externally versus constructing it internally does not change the accounting.

The firm should capitalize the legal fees to register and establish the patent as part of the cost of the patent. The firm might consider this cost as sufficiently immaterial to warrant treatment as an asset and expense it immediately.

The firm should capitalize the cost of the castings and amortize them over the expected useful life of the vehicle. The cost of the manufacturing permits and the cost of manufacturing the first vehicle are product costs that increase work-in-process inventory.

10.17 (Bulls Eye Stores; calculating interest capitalized during construction.) (amounts in US\$)

Capitalized Interest on Borrowing Directly Related to Construction: $0.06 \times \$2,000,000$	\$ 120,000
Capitalized Interest of Other Borrowing: $0.07 \times \$1,400,000$	<u>98,000</u>
Total Interest Capitalized	<u>\$ 218,000</u>

10.18 (Nexor; amount of interest capitalized during construction.) (amounts in US\$)

a. Average Construction = $(\$30,000,000 + \$60,000,000)/2 = \$45,000,000$.

Relevant Loans	Interest Anticipated
\$ 25,000,000 at 8%	\$ 2,000,000
<u>20,000,000 at 6%</u>	<u>1,200,000</u>
<u>\$ 45,000,000</u>	<u>\$ 3,200,000</u>

b. Interest Expense.....8,000,000
 Interest Payable 8,000,000
 $(\$25,000,000 \times 0.08) + (\$100,000,000 \times 0.06)$.

Construction-in-Process3,200,000
 Interest Expense..... 3,200,000

c. Interest Expense.....8,000,000
 Interest Payable 8,000,000
 $(\$25,000,000 \times 0.08) + (\$100,000,000 \times 0.06)$.

Construction-in-Process7,100,000
 Interest Expense..... 7,100,000
 $(\$25,000,000 \times 0.08) + (\$85,000,000 \times 0.06)$.

10.19 (Carlton, Inc.; calculations for various depreciation methods.) (amounts in US\$)

	2013	2014	2015
a. Straight-Line (Time) Method	\$14,000	\$14,000	\$14,000
$(\$88,800 - \$4,800)/6 = \$14,000$.			
b. Straight-Line (Use) Method	\$12,600	\$14,000	\$15,400
$\$84,000/30,000 = \2.80 per hour.			

10.20 (Luck Delivery Company; calculations for various depreciation methods.)
(amounts in US\$)

a.	Depreciation Charge (Straight-Line)	
2013	\$ 6,000	(\$30,000/5)
2014	6,000	
2015	6,000	
2016	6,000	
2017	<u>6,000</u>	
	<u>\$30,000</u>	
b.	Depreciation Charge (Double-Declining-Balance)	
2013	\$12,000	(\$30,000 × 0.40)
2014	7,200	(\$18,000 × 0.40)
2015	4,320	(\$10,800 × 0.40)
2016	3,240	(\$6,480/2)
2017	<u>3,240</u>	(balance)
	<u>\$30,000</u>	
c.	Depreciation Charge (Sum-of-the-Years'-Digits)	
2013	\$10,000	(\$30,000 × 5/15)
2014	8,000	(\$30,000 × 4/15)
2015	6,000	(\$30,000 × 3/15)
2016	4,000	(\$30,000 × 2/15)
2017	<u>2,000</u>	(\$30,000 × 1/15)
	<u>\$30,000</u>	
d.	Tax Depreciation	
2013	\$ 6,000	(= \$30,000 × 0.20)
2014	9,600	(= \$30,000 × 0.32)
2015	5,760	(= \$30,000 × 0.192)
2016	3,450	(= \$30,000 × 0.115)
2017	3,450	(= \$30,000 × 0.115)
2018	<u>1,740</u>	(= \$30,000 × 0.058)
	<u>\$30,000</u>	

10.21 (Thom Corporation; change in depreciable life and salvage value.)
(amounts in US\$)

Carrying Value on January 1, 2013: $\$10,000,000 - \{2 \times [(\$10,000,000 - \$1,000,000)/6]\} = \$7,000,000$. Depreciation expense for 2013 based on the new depreciable life and salvage value is $\$3,200,000 [= (\$7,000,000 - \$600,000)/2]$.

10.22 (Florida Manufacturing Corporation; journal entries for revising estimate of service life.) (amounts in US\$)

a. Work-in-Process Inventory 2,400
 Accumulated Depreciation..... 2,400
 (\$180,000 – \$7,200)/144 = \$1,200 per month.

b. Work-in-Process Inventory 14,400
 Accumulated Depreciation..... 14,400
 12 × \$1,200 = \$14,400.

c. Depreciation to 1/1/2019 = 62 months × \$1,200 = \$74,400.
 Remaining depreciation = \$180,000 – \$74,400 – \$3,840 = \$101,760.
 Remaining life = 168 months – 62 months = 106 months as of
 8/30/2019.
 Depreciation charge per month = \$101,760/106 = \$960.

Work-in-Process Inventory 13,440
 Accumulated Depreciation..... 13,440
 (8 × \$1,200) + (4 × \$960) = \$13,440.

d. By March 31, 2024, the machine has been on the new depreciation schedule for September 2019 through March 2024 (55 months total). Accumulated depreciation is \$84,000 + (55 × \$960) = \$84,000 + \$52,800 = \$136,800.

Carrying value is \$180,000 – \$136,800 = \$43,200; sale at \$40,000 results in a loss of \$3,200 (= \$40,000 – \$43,200).

Journal entries are as follows:

Work-in-Process Inventory 2,880
 Accumulated Depreciation..... 2,880
 3 × \$960 = \$2,880; to bring depreciation up to date as of 3/31/2024.

Cash..... 40,000
 Accumulated Depreciation..... 136,800
 Loss on Disposal of Machinery 3,200
 Machinery 180,000

10.23 (Disney World; distinguishing repairs versus improvements.) (amounts in US\$)

Repair: $(1.00/1.20 \times \$30,200) + \$86,100 + (1.00/1.25 \times \$26,900) + \$12,600 = \$145,387$.

Improvement: $(0.20/1.20 \times \$30,200) + (0.25/1.25 \times \$26,900) = \$10,413$.

10.24 (Wildwood Properties; computing the amount of an impairment loss on tangible long-lived assets.) (amounts in US\$)

The undiscounted cash flows total \$12,400,000 [= $(\$1,400,000 \times 6) + \$4,000,000$]. The carrying value of the building of \$15,000,000 exceeds the undiscounted estimated cash flows, so an impairment loss has occurred. The present value of the expected cash flows when discounted at 10% is \$8,355,244 [= $(\$1,400,000 \times 4.35526) + (\$4,000,000 \times 0.56447) = \$6,097,364 + \$2,257,880$]. The impairment loss is, therefore, \$6,644,756 (= $\$15,000,000 - \$8,355,244$) under both U.S. GAAP and IFRS.

10.25 (Kieran Corporation; computing the amount of impairment loss.) (amounts in US\$)

	Carrying Value	Undiscounted Cash Flows	Impairment Loss Recognized	Fair Value	Amount of Loss
Land.....	\$ 550,000	\$ 575,000	No	\$ 550,000	\$ 0
Buildings.....	580,000	600,000	No	580,000	0
Equipment.....	1,200,000	950,000	Yes	800,000	400,000
Goodwill.....	<u>500,000^a</u>	—	Yes	<u>270,000</u>	<u>230,000</u>
Total	<u>\$ 2,830,000</u>			<u>\$ 2,200,000</u>	<u>\$ 630,000</u>

^a $\$500,000 = \$2,400,000 - \$400,000 - \$600,000 - \$900,000$.

After recognizing the impairment losses on the property, plant, and equipment, the carrying value of Kieran Corporation is \$2,430,000 (= $\$550,000$ for land + $\$580,000$ for buildings + $\$800,000$ for equipment + $\$500,000$ for goodwill). The carrying value of \$2,430,000 exceeds the fair value of the entity of \$2,200,000, so a goodwill impairment loss may have occurred. The fair value column above shows the allocation of the \$2,200,000 fair value to identifiable assets, with the residual of \$270,000 attributed to goodwill. The carrying value of the goodwill of \$500,000 exceeds its implied fair value of \$270,000, so Kieran Corporation recognizes an impairment loss on the goodwill of \$230,000.

10.26 (Fedup Express; computing the gain or loss on sale of equipment.)
(amounts in US\$)

Annual depreciation is \$7,000 [= $(\$48,000 - \$6,000)/6$]. Depreciation expense for the first six months of 2013 is \$3,500.

Depreciation Expense	3,500	
Accumulated Depreciation		3,500

The carrying value of the delivery truck after the entry above is \$16,500 [= $\$48,000 - (4.5 \times \$7,000)$]. The accumulated depreciation totals \$31,500 (= $4.5 \times \$7,000$). The entry to record the sale is:

Cash.....	14,000	
Accumulated Depreciation	31,500	
Loss on Sale of Delivery Truck	2,500	
Delivery Truck.....		48,000

10.27 (Wilcox Corporation; working backward to derive proceeds from disposition of plant assets.) (amounts in US\$)

Cost of Equipment Sold:	$\$400,000 + \$230,000 - \$550,000 = \$80,000.$
Accumulated Depreciation on Equipment Sold:	$\$180,000 + \$50,000 - \$160,000 = \$70,000.$
Carrying Value of Equipment Sold:	$\$80,000 - \$70,000 = \$10,000.$
Proceeds of Sale:	$\$10,000 + \$4,000 = \$14,000.$

10.28 (Journal entries to correct accounting errors.) (amounts in US\$)

a. Depreciation Expense.....	375	
Accumulated Depreciation.....		375
$\$3,000 \times 0.25 \times 6/12 = \$375.$		
Accumulated Depreciation.....	1,875	
Loss on Disposal of Equipment	325	
Equipment		2,200
$\$3,000 \times 0.25 \times 2.5 = \$1,875. \$3,200 + \$3,000 - \$4,000 = \$2,200. \$800 \text{ selling price} - \$1,125 \text{ carrying value} = \325 loss.		
b. Accumulated Depreciation.....	5,000	
Truck.....		5,000

10.28 continued.

c.	Depreciation Expense.....	60	
	Accumulated Depreciation.....		60
	$\$1,200 \times 0.10 \times 6/12 = \$60.$		
	Accumulated Depreciation.....	270	
	Theft Loss		270
	$\$1,200 \times 0.10 \times 27/12 = \$270.$		

10.29 (Moon Macrosystems; recording transactions involving tangible and intangible assets.) (amounts in US\$)

a.	Office Equipment.....	400,000	
	Computer Software	40,000	
	Cash.....		440,000
b.	Office Equipment.....	20,000	
	Computer Software	10,000	
	Cash.....		30,000
c.	2011 and 2012		
	Depreciation Expense [(\$400,000 + \$20,000 – \$40,000)/10].....	38,000	
	Amortization Expense [(\$40,000 + \$10,000)/4]	12,500	
	Accumulated Depreciation.....		38,000
	Computer Software		12,500
d.	Impairment Loss of Computer Software (\$40,000 + \$10,000 – \$12,500 – \$12,500)	25,000	
	Computer Software		25,000
e.	Depreciation Expense [(\$400,000 + \$20,000 – \$38,000 – \$38,000 – \$56,000)/12]	24,000	
	Accumulated Depreciation.....		24,000

10.29 continued.

f. Depreciation Expense.....	24,000	
Accumulated Depreciation.....		24,000
Cash.....	260,000	
Accumulated Depreciation (\$38,000 + \$38,000 + \$24,000 + \$24,000).....	124,000	
Loss on Sale of Office Equipment	36,000	
Office Equipment.....		420,000

10.30 (Cloud Airlines; effect on net income of changes in estimates for depreciable assets.) (amounts in US\$)

Income has been about \$180 million (= 0.06 × \$3 billion) per year.

Reconciliation of Plant Data:

Airplanes' Cost.....	\$ 2,500,000,000
Less Salvage Value (10%)	<u>250,000,000</u>
Depreciable Basis	<u>\$ 2,250,000,000</u>
Divided by 10-Year Life Equals Yearly Depreciation Charges.....	\$ <u>225,000,000</u>
Times 4 Years Equals Accumulated Depreciation	\$ 900,000,000
Plus Net Carrying Value	<u>1,600,000,000</u>
Airplanes' Cost.....	<u>\$ 2,500,000,000</u>

New Depreciation Charge:

Net Carrying Value	\$ 1,600,000,000
Less Salvage Value (12% of Cost).....	<u>300,000,000</u>
Depreciation Basis	<u>\$ 1,300,000,000</u>
Divided by 10 (= 14 – 4) Years Equals Revised Yearly Depreciation Charge.....	<u>\$ 130,000,000</u>

Increase in Pretax Income:

Old Depreciation Charges.....	\$ 225,000,000
New Depreciation Charges	<u>130,000,000</u>
	\$ 95,000,000
Multiplied by (1 – tax rate) = 1 – 0.35 = 0.65	<u> × .65</u>
Increase in After-Tax Income	<u>\$ 61,750,000</u>

Income will rise by about 34.3% (= \$61.75/\$180.0).

Note that a modest change in depreciation parameters can significantly affect net income.

10.31 (Recognizing and measuring impairment losses.) (amounts in US\$)

- a. The loss occurs because of an adverse action by a governmental entity. The undiscounted cash flows of \$50 million are less than the carrying value of the building of \$60 million. An impairment loss has therefore occurred. The fair value of the building of \$32 million is less than the carrying value of \$60 million. Thus, the amount of the impairment loss is \$28 million (= \$60 million – \$32 million). The journal entry to record the impairment loss is (in millions):

Loss from Impairment	28	
Accumulated Depreciation.....	20	
Building.....		48

This entry records the impairment loss, eliminates the accumulated depreciation, and writes down the building to its fair value of \$32 million (= \$80 – \$48).

- b. The undiscounted cash flows of \$70 million exceed the carrying value of the building of \$60 million. Thus, no impairment loss occurs according to the definition in U.S. GAAP. An **economic** loss occurred but U.S. GAAP does not recognize it.
- c. The loss arises because the accumulated costs significantly exceed the amount originally anticipated. The carrying value of the building of \$25 million exceeds the undiscounted future cash flows of \$22 million. Thus, an impairment loss has occurred. The impairment loss recognized equals \$9 million (= \$25 million – \$16 million). The journal entry is (in millions):

Loss from Impairment	9	
Construction in Process		9

- d. The loss occurs because of a significant decline in the fair value of the patent. U.S. GAAP requires calculation of the impairment loss on the patent before computing the impairment loss on goodwill. The undiscounted future cash flows of \$18 million are less than the carrying value of the patent of \$20 million. Thus, an impairment loss occurred. The amount of the loss is \$8 million (= \$20 million – \$12 million). The journal entry to record the loss is (in millions):

Loss from Impairment	8	
Patent		8

10.31 d. continued.

The second step is to determine if an impairment loss on the goodwill occurred. The fair value of the entity is \$25 million. The carrying value after writing down the patent is \$27 million (= \$12 million for patent and \$15 million for goodwill). Thus, a goodwill impairment loss occurred. If the fair value of the patent is \$12 million, the market value of the goodwill is \$13 million. The impairment loss on goodwill is therefore \$2 million (= \$15 million – \$13 million). The journal entry is (in millions):

Loss from Impairment	2	
Goodwill.....		2

- e. The loss occurs because of a significant change in the business climate for Chicken Franchisees. One might question whether this loss is temporary or permanent. U.S. GAAP discusses but rejects the use of a permanency criterion in identifying impairment losses. Thus, an impairment loss occurs in this case because the future undiscounted cash flows of \$6 million from the franchise rights are less than the carrying value of the franchise rights of \$10 million. The amount of the impairment loss is \$7 million (= \$10 million – \$3 million). The journal entry is (in millions):

Impairment Loss	7	
Franchise Rights		7

This entry assumes that Chicken Franchisees does not use an Accumulated Amortization account.

10.32 (Pfizer; expensing versus capitalizing research and development costs.)
(amounts in millions of US\$)

	Year 1	Year 2	Year 3	Year 4
a. Expense Costs as Incurred				
Other Income	\$ 30	\$ 30	\$ 30	\$ 30
Additional Income from R&D:				
First Year's R&D.....	36	36	36	
Second Year's R&D....		36	36	36
Third Year's R&D.....			36	36
Fourth Year's R&D....				36
R&D Expense.....	<u>(90)</u>	<u>(90)</u>	<u>(90)</u>	<u>(90)</u>
Income (Loss) Before Taxes.....	<u>\$ (24)</u>	<u>\$ 12</u>	<u>\$ 48</u>	<u>\$ 48</u>
	Year 1	Year 2	Year 3	Year 4
b. Capitalize and Amortize over 3 Years (Including Year of Occurrence)				
Other Income	\$ 30	\$ 30	\$ 30	\$ 30
Additional Income from R&D:				
First Year's R&D.....	36	36	36	
Second Year's R&D....		36	36	36
Third Year's R&D.....			36	36
Fourth Year's R&D....				36
R&D Amortization Expense:				
First Year's R&D.....	(30)	(30)	(30)	
Second Year's R&D....		(30)	(30)	(30)
Third Year's R&D.....			(30)	(30)
Fourth Year's R&D....				(30)
Income Before Taxes.....	<u>\$ 36</u>	<u>\$ 42</u>	<u>\$ 48</u>	<u>\$ 48</u>
Deferred R&D Asset on Balance Sheet:				
First Year's R&D.....	\$ 60	\$ 30		
Second Year's R&D....		60	\$ 30	
Third Year's R&D.....			60	\$ 30
Fourth Year's R&D....				60
Total.....	<u>\$ 60</u>	<u>\$ 90</u>	<u>\$ 90</u>	<u>\$ 90</u>

10.32 continued.

- c. The expensing policy leads to higher expenses and lower income before income taxes, in the first two years. After that, the two policies are the same. When the firm ceases to spend on R&D, the policy of expensing will show higher income in the two years when the benefits of prior R&D continue, but there are no matching expenses. There are no expenses under policy (1), but policy (2) continues to show amortization expense. Thus, policy (1) is more conservative in the sense that it results in smaller cumulative income before taxes until the firm ceases to spend on R&D. Policy (1) also results in smaller assets on the balance sheet because, unlike policy (2), it shows no asset for Deferred R&D Costs.
- d. The pre-tax income under the two policies will continue to be the same if there is no growth or change in policy. Policy (2) will show a lower rate of return on total assets and a lower rate of return on stockholders' equity than will policy (1) because the asset and equity totals are larger under policy (2) under policy (1).

10.33 (Comerica Mills; interpreting disclosures regarding long-lived assets.)
(amounts in millions of US\$)

- a. Comerica Mills purchased software for its _____ from a software developer. Comerica Mills expects to receive future benefits from using the software and the acquisition cost provides evidence of the amount of expected future benefits.
- b. Yes. The computer software has a finite life because of technological obsolescence and would be depreciated.
- c. Average Total Life: $0.5(\$5,806 - \$54 - \$252 + \$6,096 - \$61 - \$276)/\$421 = 13.4$ years.

Average Age: $0.5(\$2,809 + \$3,082)/\$421 = 7.0$ years.
- d. Yes. The accumulated depreciation account increased by \$273 (= \$3,082 - \$2,809). Depreciation expense increased accumulated depreciation by \$421. Thus, the accumulated depreciation on assets sold or abandoned was \$148 (= \$273 - \$421).

10.33 continued.

- e. Comerica Mills has grown heavily by corporate acquisitions. Intangibles comprise 57.9% (= $\$10,529/\$18,184$) of total assets. Because GAAP does not require firms to recognize internally developed intangibles, these intangibles arise from corporate acquisitions.
- f. Yes. The amount for brands and goodwill increased. Because firms cannot write up assets for increases in fair value, the increased amounts suggest a small acquisition during the year.
- g. Patents have a specified legal life. Trademarks are subject to renewal at the end of their legal life as long as a firm continues to use them. Comerica Mills must intend not to renew these trademarks.
- h. Comerica Mills must expect the brand names to have an indefinite life. The firm would need to provide evidence based on past experience for its brand names and from industry experience to convince its independent accountants that the timing of any cessation of benefits is highly uncertain.
- i. Comerica Mills shows amounts in its Construction in Progress account. Thus, Comerica Mills must capitalize a portion of interest expense. The reported amount is the net of total interest cost minus the amount capitalized in Construction in Progress.

10.34 (Hargon, Inc.; interpreting disclosures regarding long-lived assets.)
(amounts in millions of US\$)

- a. No. Firms do not commence recognizing depreciation until they put an asset into service. The assets under construction have not yet reached that stage.
- b. Average Total Life: $0.5(\$7,321 - \$294 - \$958 + \$8,688 - \$398 - \$1,271)/\$593 = 11.0$ years.

Average Age: $0.5(\$2,283 + \$2,767)/\$593 = 4.3$ years.
- c. Yes. Accumulated depreciation experienced a net increase of \$484 (= $\$2,767 - \$2,283$) during the year. Depreciation increased the Accumulated Depreciation account by \$593. Thus, accumulated depreciation on assets sold or abandoned was \$109 (= $\$484 - \593).

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