

# Chapter 10

---

## Plant Assets and Intangible Assets

### T Questions

---

1. Depreciation: Buildings, Machinery and Equipment, Furniture and Fixtures  
Depletion: Natural Resources (Minerals)  
Amortization: Intangibles
2. The *cost* of all assets, including plant assets, is the sum of all the costs incurred to bring the asset to its intended purpose, net of all discounts. The cost of repairing the asset after it is placed in service is debited to expense, not to the asset account.
3. Under the *relative-sales-value method*, the cost of an individual asset acquired in a group (or basket) purchase is based on the ratio of that asset's market value to the total market value of the combined assets. The ratio for each asset is multiplied by the total purchase price to compute the cost of each asset.
4. A *capital expenditure* is an expenditure that increases the capacity or efficiency or the useful life of a plant asset or an intangible asset. Accordingly, it is debited to the asset account. An expense merely repairs the asset or maintains it in good working order.
5. Depreciation is a process of allocating the cost of a plant asset to expense as the asset is used. Depreciation is *not* a process of valuation based on the asset's market value. Depreciation is *not* a fund of cash set aside to replace a used-up asset. Establishing a cash fund is entirely separate from depreciation.
6. *Accelerated depreciation* is a pattern of depreciation that writes off more of the asset's cost nearer the start of its useful life than the *straight-line* method does.  
  
Double-declining-balance depreciation results in the most depreciation in the first year of an asset's life.
7. The units-of-production method is most appropriate for depreciating the minivans. Under this method, depreciation arises only when the assets are used. When business is slow, Harwood records less depreciation. This pattern is consistent with the matching principle.
8. The accelerated double-declining-balance method is best from an income-tax point of view. It results in the most depreciation and the lowest taxable income in the early years of the asset's life. Taxpayers benefit by paying less taxes early in the asset's life, thus conserving cash that they can invest to earn net income.
9. Depreciation for less than a full year may be computed by multiplying an annual amount by the appropriate fraction of the year. Depreciation for less than a full month may be accounted for as follows. Record a full month's depreciation if the asset is purchased on or before the 15th day of the month, and no depreciation for the month if purchased after the 15th.
10. Gain = Sale Proceeds > Book value of the asset sold.  
Loss = Sale Proceeds < Book value of the asset sold.
11. *Depletion* expense applies to natural resources. Depletion is computed by the units-of-production method.

12. Intangible assets differ from most other assets in that intangibles have no physical form. They carry special rights for the owner. *Amortization* expense applies to intangibles.
13. The excess of acquisition cost over the market value of the other company's net assets is called *goodwill*. Goodwill is an intangible asset, and its cost, like that of other intangibles, is amortized over a period not to exceed 40 years.
14. Oracle does *not* report on its balance sheet any goodwill that Oracle has created by being successful. No company does. This goodwill would be recorded only by another company that purchased Oracle.

## T Daily Exercises

---

(5 min.) **DE 10-1**

1. The Home Depot's fiscal year ends on January 30 because this date marks the low point in the company's operations each year.

2. Property and equipment

	<i>Millions</i>
3. Property and equipment, at cost.....	\$11,890
Less Accumulated depreciation.....	<u>(1,663)</u>
Property and equipment, book value.....	<u>\$10,227</u>

(5 min.) **DE 10-2**

The related costs (back property tax, transfer taxes, removal of a building, and survey fee) are included as part of the cost of the land because the buyer of the land must incur these costs to get the land ready for its intended use.

After the land is ready for use, the related costs (listed above) would be expensed.

(5 min.) **DE 10-3**

A *capital lease* is fundamentally like an asset to the lessee because the lessee is making lease payments that are similar to installment payments to purchase the asset. For example, The Home Depot has long-term capital leases on some of its store buildings. The Home Depot accounts for its capital leases as assets that appear on the company's balance sheet.

(10 min.) **DE 10-4**

*Req. 1*

<b>Journal</b>					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
20X3					
Dec.	31	Equipment ( $\$800,000 \times .09$ )		72,000	
		Cash			72,000

*Req. 2*

		Equipment	
Construction costs	800,000		
Interest cost	72,000		
Dec. 31, 20X3 Bal.	872,000		

(10 min.) **DE 10-5**

(10-15 min.) **DE 10-6**

Journal				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Land (\$100,000 × .50)		50,000	
	Building (\$100,000 × .375)		37,500	
	Equipment (\$100,000 × .125)		12,500	
	Note Payable			100,000

	Estimated Market Value	Percent of Total	
Land.....	\$ 80,000	\$80,000 / \$160,000 =	50.0%
Building.....	60,000	\$60,000 / \$160,000 =	37.5
Equipment.....	20,000	\$20,000 / \$160,000 =	12.5
Total.....	<u>\$160,000</u>		<u>100.0%</u>

Req. 1

Journal				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	<i>Incorrect entry:</i>			
	Airplane (or Equipment)		750,000	
	Cash			750,000
	<i>Correct entry:</i>			
	Repair Expense		750,000	
	Cash			750,000

Req. 2

Income Statement			
Revenues		CORRECT	
Expenses		<u>UNDERSTATED</u>	
Net income		<u>OVERSTATED</u>	

  

Balance Sheet			
Current assets	CORRECT	Total liabilities	CORRECT
Plant assets	<u>OVERSTATED</u>	Owner's equity	<u>OVERSTATED</u>
Total assets	<u>OVERSTATED</u>	Total liabilities and owner's equity	<u>OVERSTATED</u>

(10 min.) **DE 10-7**

*Req. 1*

First-year depreciation:

- a. Straight-line  $(\$36,000,000 - \$6,000,000) / 5$  years..... \$ 6,000,000
- b. Units-of-production  $[(\$36,000,000 - \$6,000,000) / 5,000,000 \text{ miles}] \times 750,000 \text{ miles}$ ..... \$ 4,500,000
- c. Double-declining-balance  $(\$36,000,000 / 5 \text{ years} \times 2)$ .... \$14,400,000

*Req. 2*

Book value:

	Straight- Line	Units-of- Production	Double- Declining- Balance
Cost.....	\$36,000,000	\$36,000,000	\$36,000,000
Less Accumulated depreciation.....	<u>(6,000,000)</u>	<u>(4,500,000)</u>	<u>(14,400,000)</u>
Book value.....	<u>\$30,000,000</u>	<u>\$31,500,000</u>	<u>\$21,600,000</u>

(10 min.) **DE 10-8**

Fifth-year depreciation:

- a. Straight-line  $(\$36,000,000 - \$6,000,000) / 5$  years..... \$6,000,000
- b. Units-of-production  $[(\$36,000,000 - \$6,000,000) / 5,000,000 \text{ miles}] \times 1,250,000 \text{ miles}$ ..... \$7,500,000
- c. Double-declining-balance
  - Year 1  $(\$36,000,000 / 5 \text{ years}) \times 2 = \$14,400,000$
  - Year 2  $[(\$36,000,000 - \$14,400,000) / 5] \times 2 = \$8,640,000$
  - Year 3  $\$36,000,000 - \$14,400,000 - \$8,640,000 = \$12,960,000$ ;  
 $(\$12,960,000 / 5) \times 2 = \$5,184,000$
  - Year 4  $\$12,960,000 - \$5,184,000 - \$6,000,000 = \$1,776,000$
  - Year 5 No depreciation: asset is fully depreciated = \$-0-

(10 min.) **DE 10-9**

*Req. 1*

The double-declining-balance (DDB) method offers the tax advantage for the first year of an asset's use. The advantage results from the greater amount of DDB depreciation (versus the amount of depreciation under the other methods) during the first year. This saves cash that the taxpayer can invest to earn a return.

*Req. 2*

DDB depreciation.....	\$14,400,000
Straight-line depreciation.....	<u>(6,000,000)</u>
Excess depreciation tax deduction.....	\$ 8,400,000
Income tax rate.....	<u>× .40</u>
Income tax savings for first year.....	<u>\$ 3,360,000</u>

(5-10 min.) **DE 10-10**

First-year depreciation (for a partial year):

- a. Straight-line  $(\$36,000,000 - \$6,000,000) / 5 \text{ years} \times 9/12..$  \$ 4,500,000
- b. Units-of-production  $(\$36,000,000 - \$6,000,000) /$   
 $5,000,000 \text{ miles} \times 800,000 \text{ miles}.....$  \$ 4,800,000
- c. Double-declining-balance  $(\$36,000,000 / 5) \times 2 \times 9/12.....$  \$10,800,000

(10 min.) **DE 10-11**

<b>Journal</b>				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Depreciation Expense—Hot Dog Stand		10,000	
	Accumulated Depreciation—Hot Dog Stand			10,000

Depreciation for years 1-4:

$$\$40,000 / 8 \text{ years} = \$ 5,000 \text{ per year}$$

$$\$ 5,000 \times 4 \text{ years} = \$20,000 \text{ for years 1-4}$$

Asset's remaining depreciable book value	)	(New) Estimated useful life remaining	=	(New) Annual depreciation
$\$40,000 - \$20,000$	)	2 years	=	\$10,000 per year
$\underbrace{\hspace{10em}}_{\$20,000}$				

*Req. 1*

(a) Straight-line depreciation method:

Journal					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
20X2					
Dec.	31	Cash		23,000	
		Accumulated Depreciation		16,000	
		Loss on Sale of Delivery Truck		2,000	
		Delivery Truck			41,000

(b) Double-declining-balance depreciation method:

Journal					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
20X2					
Dec.	31	Cash		23,000	
		Accumulated Depreciation		26,240	
		Delivery Truck			41,000
		Gain on Sale of Delivery Truck			8,240

*Req. 2*

The difference between the loss under the straight-line depreciation method and the gain under the double-declining-balance method results from the difference in depreciation amounts under the two depreciation methods.

Depreciation is higher under DDB, so the asset's book value is lower. As a result, there will be a larger gain under DDB.

*Req. 1*

Units-of-production depreciation method is used to compute depletion expense.

*Req. 2*

Journal					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
					<i>Billions</i>
		Depletion Expense $[(\$18 / 2.4) \times 0.6]$		4.5	
		Accumulated Depletion			4.5

*Req. 3*

At December 31, 20X1:	<i>Billions</i>
Cost of mineral assets.....	\$18.0
Less Accumulated depletion $(\$11.5 + \$4.5)$ .....	<u>(16.0)</u>
Book value of mineral assets.....	<u>\$ 2.0</u>

(10 min.) **DE 10-14**

*Req. 1 (Flannahan's cost of the goodwill)*

Purchase price paid for The Thrifty Nickel.....	\$700,000
Market value of The Thrifty Nickel's assets.....	\$990,000
Less: The Thrifty Nickel's liabilities.....	<u>(600,000)</u>
Market value of The Thrifty Nickel's net assets.....	<u>390,000</u>
Goodwill purchased by Flannahan Newsprint.....	<u>\$310,000</u>

*Req. 2 (Flannahan's entry to record the purchase of goodwill)*

<b>Journal</b>				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Assets		990,000	
	Goodwill		310,000	
	Liabilities			600,000
	Cash			700,000

*Req. 3*

Maximum useful life for goodwill.....	40 years
Using a 40-year life, amortization expense per year is (\$310,000 / 40 years).....	\$7,750

(10-15 min.) **DE 10-15**

*Req. 1*

Cost in excess of the fair value of net assets acquired.

*Req. 2*

	<i>Millions</i>
Cost of goodwill.....	\$344
Less Accumulated amortization.....	<u>(33)</u>
Book value of goodwill.....	<u>\$311</u>

*Req. 3*

	<i>Millions</i>
Cost of goodwill, January 30, 2000.....	\$344
Cost of goodwill, January 30, 1999.....	<u>(329)</u>
Goodwill purchased during the year ended January 30, 2000.....	<u>\$ 15</u>

(10-15 min.) **DE 10-16**

Req. 1

Questor Applications		
Income Statement		
Year Ended December 31, 20X3		
<b>Revenues:</b>		
Sales revenue		\$1,500,000
<b>Expenses:</b>		
Cost of goods sold	\$200,000	
Research and development expense	875,000	
Amortization of patent (\$300,000 / 3)	100,000	
Selling expenses	<u>400,000</u>	
Total expenses		<u>1,575,000</u>
Net income (net loss)		<u>\$ (75,000)</u>

Req. 2

Questor's outlook for future profits should be favorable. The major expense is research and development, which is all expensed in the first year. After the first year, the company should be able to earn a profit on the new software program.

**T Exercises**

(5-10 min.) **E 10-1**

Land: \$77,000 + \$120,000 + \$2,000 + \$2,500 + \$5,400 = \$206,900  
 Land improvements: \$51,000 + \$10,400 + \$6,000 = \$67,400  
 Building: \$799,000

Delmar will depreciate the land improvements and the building.

(15-20 min.) **E 10-2**

Req. 1

Cost of factory building in 20X3:  
 Construction cost..... \$600,000  
 Capitalized interest (\$600,000 × .09)..... 54,000  
 Total..... \$654,000

(continued) **E 10-2**

Req. 2

Journal				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Cash		600,000	
	Note Payable			600,000
	Borrowed money for construction of building.			
	Factory Building		600,000	
	Cash			600,000
	Incurring construction cost.			
	Factory Building		54,000	
	Cash (\$600,000 × .09)			54,000
	Recorded interest on note payable.			

(10-15 min.) **E 10-3**

Allocation of cost to individual saddles:

Saddle	Appraised Value	Proportion	Allocated Cost
1	\$ 3,350	$\$3,350 / \$13,000 = .258$	$\times \$10,000 = \$2,580$
2	5,400	$5,400 / 13,000 = .415$	$10,000 = 4,150$
3	<u>4,250</u>	$4,250 / 13,000 = .327$	$10,000 = \underline{3,270}$
Totals	<u>\$13,000</u>	<u>1.000</u>	<u>\$10,000</u>

Journal				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Saddle 1		2,580	
	Saddle 2		4,150	
	Saddle 3		3,270	
	Cash			5,000
	Note Payable			5,000

(5-10 min.) **E 10-4**

**Capital expenditures:**

- (a) major overhaul, (c) lubrication before machine is placed in service,
- (e) purchase price, (f) sales tax, (g) transportation and insurance,
- (h) installation, (i) training of personnel, (j) reinforcement to platform

**Expenses:**

- (b) ordinary recurring repairs, (d) periodic lubrication, (k) income tax

(10-15 min.) **E 10-5**

Depreciation is the process of allocating a plant asset's cost to expense over the period the asset is used. It is designed to match depreciation expense against revenue over the asset's life. The primary purpose of depreciation accounting is to match the period's expenses against its revenues in order to measure income. Of less importance is the need to account for the asset's decline in usefulness.

Lake is correct that depreciation can relate to the wear and tear of an asset. However, the depreciation of some assets is more affected by obsolescence than by physical wear and tear.

McPherson is wrong. Depreciation has nothing to do with a cash fund to replace an asset.

**Depreciation Expense Per Year**

Year	Straight-Line	Units-of-Production	Double-Declining-Balance
20X1	\$ 3,000	\$ 4,080	\$ 7,500
20X2	3,000	3,360	3,750
20X3	3,000	2,160	375
20X4	<u>3,000</u>	<u>2,400</u>	<u>375</u>
	<u>\$12,000</u>	<u>\$12,000</u>	<u>\$12,000</u>

## Computations:

Straight-line:  $(\$15,000 - \$3,000) / 4 = \$3,000$  per year.

Units-of-production:  $(\$15,000 - \$3,000) / 100,000$  miles = \$.12 per mile;  
 $34,000 \times \$0.12 = \$4,080$ ;  $28,000 \times \$0.12 = \$3,360$ ;  $18,000 \times \$0.12 = \$2,160$ ;  
 $20,000 \times \$0.12 = \$2,400$ .

Double-declining-balance:  $\$15,000 \times (1/4 \times 2) = \$7,500$ ;  
 $(\$15,000 - \$7,500) \times 2/4 = \$3,750$ ;  $(\$15,000 - \$7,500 - \$3,750) =$   
 $\$3,750 - \$3,000$  residual value =  $\$750 / 2 = \$375$ .

The *units-of-production* method tracks the wear and tear on the truck most closely.

For income-tax purposes, the *double-declining-balance* method is best because it provides the most depreciation and thus the largest tax deductions in the early life of the asset. The company can invest the tax savings to earn a return on the investment.

MACRS depreciation method for income tax:  
Double-declining-balance

	Double-Declining-Balance	Straight-Line
Year 1:		
$\$165,000 \times 2/7$ .....	\$47,143	
$(\$165,000 - \$47,143) \times 2/7$ .....		\$21,214
Year 2:		
$(\$165,000 - \$47,143) \times 2/7$ .....	33,673	
$(\$165,000 - \$16,500) \times 2/7$ .....		<u>21,214</u>
Total .....	<u>\$80,816</u>	<u>\$42,428</u>
Extra cash to invest with DDB		
$(\$80,816 - \$42,428)$ .....	<u>\$38,388</u>	

*Note:* This solution ignores the half-year convention of MACRS depreciation.

(10-15 min.) **E 10-8**

Journal				
DATE		ACCOUNT TITLES AND EXPLANATION	DEBIT	CREDIT
Year	15	Depreciation Expense		
		[( $\$775,000 - \$100,000$ ) $\div$ 40]	16,875	
		Accumulated Depreciation—Building		16,875
Year	16	Depreciation Expense	21,458*	
		Accumulated Depreciation—Building		21,458

\*Computation:

Depreciable cost:  $\$775,000 - \$100,000 = \$675,000$

Depreciation through year 15:  $\$675,000 \div 40 = \$16,875 \times 15 = \$253,125$

Asset's remaining depreciable book value:

$\$775,000 - \$253,125 - \$200,000 = \$321,875$

New estimated useful life remaining: 15 years

New annual depreciation:  $\$321,875 \div 15 = \$21,458$

(10-15 min.) **E 10-9**

Journal					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
20X4		<i>Depreciation for 9 months:</i>			
Sept.	30	Depreciation Expense		1,710 <sup>a</sup>	
		Accumulated Depreciation— Fixtures			1,710
		<i>Sale of fixtures:</i>			
	30	Cash		4,950	
		Accumulated Depreciation— Fixtures ( $\$3,800 + \$1,710$ )		5,510	
		Store Fixtures			9,500
		Gain on Sale of Fixtures			960 <sup>b</sup>

<sup>a</sup>20X3 depreciation:  $\$9,500 \times 2/5 = \$3,800$

20X4 depreciation:  $(\$9,500 - \$3,800) \times 2/5 \times 9/12 = \$1,710$

<sup>b</sup>Gain is computed as follows:

Sale price of old store fixtures.....		\$4,950
Book value of old fixtures:		
Cost.....	\$9,500	
Less Accumulated depreciation.....	(5,510)	3,990
Gain on sale.....		<u>\$ 960</u>

(10-15 min.) **E 10-10**

Cost of new truck = Book value of old truck + Cash paid

$$\$338,175 = \$258,175^a + \$80,000$$

<sup>a</sup>Cost of old truck ..... \$385,000  
Accumulated depreciation:

$$(\$385,000 - \$100,000) \times \left[ \frac{75 + 120 + 210 + 40}{1,000} \right] \dots\dots\dots (126,825)$$

Book value of old truck..... \$258,175

(10-15 min.) **E 10-11**

<b>Journal</b>				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	(a) <i>Purchase of minerals:</i>			
	Mineral Asset		298,500	
	Cash			298,500
	(b) <i>Payment of fees and other costs:</i>			
	Mineral Asset (\$500 + \$1,000)		1,500	
	Cash			1,500
	Mineral Asset		60,000	
	Cash			60,000
	(c) Depletion Expense		75,600*	
	Accumulated Depletion—			
	Mineral Asset			75,600

\*\$298,500 + \$500 + \$1,000 + \$60,000 = \$360,000;  
 \$360,000 / 200,000 tons = \$1.80 per ton;  
 42,000 tons × \$1.80 = \$75,600

<b>Journal</b>					
DATE		ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
Part	1(a)	<i>Purchase of patent:</i>			
		Patents		1,370,000	
		Cash			1,370,000
	(b)	<i>Amortization for one year:</i>			
		Amortization Expense—Patents			
		(\$1,370,000 ) 8)		171,250	
		Patents			171,250
Part	2	<i>Amortization for year 5:</i>			
		Amortization Expense—Patents		342,500*	
		Patents			342,500

\*Asset remaining book value:  $\$1,370,000 - (\$171,250 \times 4) = \$685,000$   
 New estimated useful life remaining: 2 years  
 New annual amortization:  $\$685,000 \div 2 = \$342,500$

*Req. 1*

Campbell's title  
 for goodwill: Purchase Price in Excess of Net Assets  
 of Businesses Acquired

This title fits the definition of goodwill almost word for word.

*Req. 2*

	<i>Millions</i>
Payments to acquire other businesses.....	\$105
Less: Payments for goodwill, included in the above purchase price (\$1,697 ! \$1,655).....	(42)
Payment for other assets, such as receivables, inventory, property, and equipment.....	<u>\$ 63</u>

Req. 1

Cost of goodwill purchased:

Purchase price paid for Adelaide Bakeries.....	\$12,000,000
Market value of Adelaide's <i>net</i> assets:	
Market value of Adelaide's assets.....	\$15,000,000
Less: Adelaide's liabilities.....	<u>(10,000,000)</u>
Market value of Adelaide's <i>net</i> assets.....	<u>5,000,000</u>
Cost of goodwill purchased.....	<u>\$ 7,000,000</u>

Reqs. 2 and 3

<b>Journal</b>				
DATE	ACCOUNTS AND EXPLANATIONS	POST. REF.	DEBIT	CREDIT
	Assets (Cash, Receivables, Inventories, Plant Assets)		15,000,000	
	Goodwill		7,000,000	
	Liabilities			10,000,000
	Cash			12,000,000
	Purchased Adelaide Bakeries.			
	Amortization Expense— Goodwill (\$7,000,000 ) 10)		700,000	
	Goodwill			700,000
	Recorded amortization of goodwill.			

	Year				
	1	2	3	4	5
	Millions of Francs (F)				
1. Total current assets	No effects				
2. Equipment, net	F3.6u*	F2.7u**	F1.8u	F0.9u	Correct
3. Net income	3.6u*	0.9o	0.9o	0.9o	0.9o

u = Understated  
o = Overstated

\*Cost (F4.5 million) ! Depreciation expense (F.9 million) = F3.6 million  
\*\*Cost (F4.5 million) ! Two years' depreciation (F1.8 million) = F2.7 million

(15-30 min.) **E 10-16**

*(All amounts in millions of dollars)*

*Req. 1*

Unamortized Special Tools			
Dec. 31, 19X8 Balance	7,298		
19X9 Acquisitions	<u>2,559</u>	19X9 Amortization	2,492
Dec. 31, 19X9 Balance	7,365		

*Req. 2*

Sale proceeds .....	\$215
Less gain.....	<u>(15)</u>
Book value of assets sold .....	<u>\$200</u>