

## CHAPTER 9

## DISCUSSION QUESTIONS

1. The major characteristics of property, plant, and equipment are as follows:
  - a. They are physical objects that can be seen and touched.
  - b. They are used in operations to produce goods or provide services.
  - c. They usually have a useful life of two or more years.
2. Any expenditure incurred in the process of bringing an asset to operating condition is considered to benefit the company over the asset's useful life and therefore is treated as part of the asset's cost. In addition to the purchase price, the cost of a capitalized asset, such as a machine, might include sales tax, delivery charges, and setup costs.
3. The fair market values of the assets acquired are considered the best relative measure of future service potentials of the assets. Therefore, the cost of the assets purchased as a group is apportioned among them based on their relative fair values in order to recover the total cost over the economically useful lives of the assets acquired as a group.
4. Depreciation is an allocation of the cost of a building over its estimated useful life, not an estimate of the decline in value. Depreciation expense is recognized even though assets increase in value because the cost of assets must be expensed on the statement of comprehensive income.
5. It is impossible to conclude that any one depreciation method will result in a higher net income without specifically identifying an asset's age. During the early years of an asset's life, the straight-line method usually results in the highest net income; during the later years of an asset's life, the accelerated methods usually result in the highest net income.
6. Declining-balance depreciation differs in the following two ways from other depreciation methods: (1) the initial computation of the declining-balance rate ignores the asset's salvage value, and (2) a constant depreciation rate is multiplied by a decreasing carrying amount.
7. MACRS is an accelerated depreciation method allowed by the IRS. It is based on the double-declining-balance method. The purpose of MACRS is to allow taxpayers to rapidly report depreciation expense, thus reducing their income taxes and encouraging them to invest in new depreciable assets.
8. It is often necessary to recalculate the depletion rate for natural resources because the amount of the resource owned is usually an estimate, albeit based on scientific analysis and prior experience. For example, how do you determine how much oil is in a well? As new information becomes available, estimates of these types of reserves need to be changed.
9. When an estimate of an asset's useful life is changed, the depreciation expense for previous years should

not be recalculated. Accounting practice specifies that a change in estimate should be accounted for by changing the estimate in each of the subsequent years, but not on a retroactive basis.

10. An ordinary expenditure is one that benefits only the current period and does not increase an asset's productive capacity or life. A capital expenditure is usually significant in amount and one that benefits future periods and increases the productive capacity or lengthens the life of the asset.
11. When in doubt, firms usually classify expenditures as ordinary rather than as capital expenditures. This is the conservative approach and does not allow assets to be recorded at amounts that exceed their future economic benefits.
12. Assets should not be recorded on the financial statements at amounts that exceed their market values. Therefore, impairments of asset value must be recognized as losses in the current period.
13. It is common to have a gain or a loss on the disposal of a long-term operating asset because at the time an asset is purchased, the useful life and salvage value can only be estimated. If either the actual life or the salvage value of an asset differs from the estimates made when the asset was purchased, there will be a gain or a loss. In the rare case where these estimates are exactly correct,

there is no gain or loss if the asset is held for its entire useful life.

14. When recording the disposal of a long-term operating asset, it is necessary to debit the accumulated depreciation of the old asset because accumulated depreciation, as well as the original cost of the asset, must be removed from the books. If accumulated depreciation were not debited—hence, removed—balances that were associated with disposed-of assets would still be shown on the books. Eventually, the accumulated depreciation balance would exceed the costs of long-term operating assets.
15. Intangible assets are considered assets because they provide future benefits to a firm. Tangible existence is not a criterion in deciding whether or not something is an asset.
16. The fact that unsold businesses are not allowed to record goodwill can result in similar businesses having different kinds of financial statements. The accounts of a buyer of a firm might show higher assets than those of an unsold business because goodwill was part of the purchase. This difference in accounting could certainly affect many of the key financial ratios as well as the reported profitability of the companies.
17. Fixed asset turnover is computed as sales divided by average property, plant, and equipment (fixed assets) and is interpreted as the number of dollars in sales generated by each dollar of fixed assets.

## PRACTICE EXERCISES

**PE 9–1 (LO1) Long-Term Operating Assets**

The correct answer is E. Office supplies are a current asset.

**PE 9–2 (LO2) Asset Purchased with Cash**

Stamping Machine.....	129,840
Cash .....	129,840
<i>Purchased a stamping machine for \$129,840 (\$124,000 retail price – \$1,860 purchase discount + \$7,700 sales tax).</i>	

**PE 9–3 (LO2) Asset Purchased Partially with Cash**

Stamping Machine.....	129,840
Cash .....	89,840
Notes Payable .....	40,000
<i>Purchased a stamping machine for \$64,920 (\$124,000 retail price – \$1,860 purchase discount + \$7,700 sales tax). Paid \$89,840 cash and borrowed \$40,000 from a bank.</i>	

**PE 9–4 (LO2) Asset Purchased with Cash**

Building (\$980,000 + \$220,000).....	1,200,000
Cash .....	1,200,000
<i>Purchased a building for \$1,200,000 (\$980,000 + \$220,000 remodeling).</i>	

**PE 9–5 (LO2) Joint Assets**

Land.....	400,000
Building.....	600,000
Cash .....	1,000,000
<i>Purchased land and a building.</i>	

Asset	Fair Market Value	Percentage of Total Value	Apportionment of Lump-Sum Cost
Land.....	\$ 440,000	40%	\$ 400,000
Building .....	660,000	60%	600,000
Totals .....	<u>\$1,100,000</u>	<u>100%</u>	<u>\$1,000,000</u>

**PE 9–6 (LO2)      Acquisition of Several Assets at Once**

First, we need to allocate the correct percentages of the purchase price to the two assets—land and building—as follows:

Asset	Fair Market Value	Percentage of Total Value	Apportionment of Lump-Sum Cost
Land.....	\$240,000	25%	$0.25 \times \$890,000 = \$222,500$
Building.....	<u>720,000</u>	<u>75</u>	$0.75 \times \$890,000 = \underline{\underline{667,500}}$
<b>Totals .....</b>	<b><u>\$960,000</u></b>	<b><u>100%</u></b>	<b><u><u>\$890,000</u></u></b>

Now we can make the following entry to record the purchase:

Land.....	222,500
Building.....	667,500
Cash.....	890,000

**PE 9–7 (LO3)      Straight-Line Method of Depreciation**

$$\begin{aligned} \text{Depreciation expense} &= \frac{\text{Cost} - \text{Salvage value}}{\text{Estimated useful life (years)}} \\ &= \frac{\$1,000,000 - \$40,000}{8 \text{ years}} \\ &= \$120,000 \end{aligned}$$

Depreciation Expense.....	120,000
Accumulated Depreciation.....	120,000
<i>To record depreciation expense on a straight-line basis.</i>	

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**PE 9–8 (LO3)      Units-of-Production Method of Depreciation**

$$\begin{aligned}\text{Depreciation rate} &= \frac{\text{Cost} - \text{Salvage value}}{\text{Estimated useful life (units)}} \\ &= \frac{\$1,000,000 - \$40,000}{1,600,000 \text{ units}} \\ &= \$0.60 \text{ per unit}\end{aligned}$$

$$\text{Current-year depreciation} = \text{Depreciation rate} \times \text{Units produced}$$

$$\begin{aligned}&= \$0.60 \times 180,000 \\ &= \$108,000\end{aligned}$$

Depreciation Expense.....	108,000
Accumulated Depreciation.....	108,000
<i>To record depreciation expense on units-of-production basis.</i>	

**PE 9–9 (LO3)      Partial-Year Depreciation Calculations**

<u>Full-Year Depreciation*</u>	<u>Depreciation First Year (3 months)</u>	<u>Depreciation Second Year (12 months)</u>
\$5,000	\$1,250 (\$5,000 × 3/12)	\$5,000

$$\begin{aligned}*\text{Full-year depreciation} &= \frac{\text{Cost} - \text{Salvage value}}{\text{Estimated useful life (years)}} \\ &= \frac{\$34,000 - \$4,000}{6 \text{ years}} \\ &= \$5,000\end{aligned}$$

**PE 9–10 (LO3)      Units-of-Production Method with Natural Resources**

$$\text{Depletion rate} = \frac{\text{Cost}}{\text{Total estimated units}} = \frac{\$4,200,000}{600,000 \text{ barrels}} = \$7.00 \text{ per barrel}$$

$$\begin{aligned}\text{First-year depletion} &= \text{Depletion rate} \times \text{Barrels extracted and sold} \\ &= \$7.00 \times 70,000 \\ &= \$490,000\end{aligned}$$

Depletion Expense .....	490,000
Accumulated Depletion, Oil Field .....	490,000
<i>To record depletion for the year: 70,000 barrels at \$7.00 per barrel.</i>	

**PE 9–11 (LO3) Declining-Balance Method of Depreciation**

DDB rate =  $1/10 \times 2 = 20\%$

Depreciation expense year 1 =  $\$3,000,000 \times 0.20 = \$600,000$

Depreciation expense year 2 =  $(\$3,000,000 - \$600,000) \times 0.20 = \$480,000$

**PE 9–12 (LO4) Changes in Depreciation Estimates**

Carrying amount after three years =  $\$1,000,000 - (3 \times \$120,000) = \$640,000$

Depreciation expense year 4 =  $(\$640,000 - \$40,000)/8 \text{ years} = \$75,000$

**PE 9–13 (LO5) Repairing and Improving Property, Plant, and Equipment**

Original cost .....	\$ 150,000
Accumulated depreciation (prior to overhaul).....	<u>110,000</u>
Remaining carrying amount.....	\$ 40,000
Capital expenditure (overhaul).....	<u>24,000</u>
New carrying amount.....	\$ 64,000
Less salvage value.....	<u>8,000</u>
New depreciable amount.....	\$ 56,000
Remaining life.....	<u>÷ 7 years</u>
New annual depreciation ( $\$56,000/7$ ).....	<u>\$ 8,000</u>

**PE 9–14 (LO6) Determining Asset Impairment**

Original cost .....	\$830,000
Accumulated depreciation .....	<u>581,000</u>
Carrying amount.....	<u>\$249,000</u>
Recoverable amount.....	\$210,000

Because the recoverable amount is less than the carrying amount of the building, the asset is deemed to be impaired.

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**PE 9–15 (LO6) Recording Decreases in the Value of Property, Plant, and Equipment**

Impairment Loss (\$249,000 – \$210,000) .....	39,000
Accumulated Impairment Losses.....	39,000
<i>Recognized \$39,000 impairment loss on building.</i>	

**PE 9–16 (LO8) Discarding Property, Plant, and Equipment**

Accumulated Depreciation, Truck .....	48,000
Loss on Disposal of Truck .....	12,500
Truck.....	60,000
Cash .....	500
<i>Scrapped \$60,000 truck and recognized loss of \$12,500 (including \$500 disposal costs).</i>	

**PE 9–17 (LO8) Selling Property, Plant, and Equipment**

Cash .....	14,000
Accumulated Depreciation, Truck .....	48,000
Truck.....	60,000
Gain on Sale of Truck .....	2,000
<i>Sold \$60,000 truck at a gain of \$2,000.</i>	

**PE 9–18 (LO8) Selling Property, Plant, and Equipment**

Cash .....	20,000
Accumulated Depreciation .....	24,000
Loss on Sale of Truck.....	6,000
Truck.....	50,000
<i>Sold \$50,000 truck at a loss of \$6,000.</i>	

**PE 9–19 (LO9) Patents**

Amortization Expense, Patent.....	30,000
Patent.....	30,000
<i>To amortize one-seventh of the cost of the patent.</i>	

**PE 9–20 (LO9)      Goodwill**

<b>Inventory .....</b>	<b>40,000</b>
<b>Property, Plant, and Equipment.....</b>	<b>190,000</b>
<b>Other Assets .....</b>	<b>72,000</b>
<b>Goodwill .....</b>	<b>55,000</b>
<b>Liabilities .....</b>	<b>67,000</b>
<b>Cash .....</b>	<b>290,000</b>

**Purchased Little Company for \$290,000.**

**PE 9–21 (LO10)      Fixed Asset Turnover**

$$\begin{aligned}
 \text{Fixed asset turnover} &= \frac{\text{Sales}}{\text{Average fixed assets}} \\
 &= \frac{\$595,000}{(\$195,000 + \$180,000)/2} \\
 &= 3.17 \text{ times}
 \end{aligned}$$

**EXERCISES****E 9–1 (LO2) Accounting for the Acquisition of a Long-Term Asset**

1. Machine.....	28,213
Cash.....	28,213
<i>Purchased machine (\$25,000 cost + \$750 installation + \$900 testing + \$1,563 sales tax).</i>	
2. Machine.....	28,213
Note Payable .....	25,000
Cash.....	3,213
<i>Purchased machine, paying \$3,213 with cash and issuing a note for the remainder.</i>	

**E 9–2 (LO2) Computing Asset Cost**

Purchase price	NT\$ 540,000
Installation costs	1,000
Delivery cost	1,400
Total cost for the machine	<u>NT\$ 542,400</u>

The repair cost is not necessary cost. Therefore, it is not included in the cost of the machine.

**E 9–3 (LO2) Accounting for the Acquisition of Assets—Basket Purchase**

Asset	Fair Market Value	Percent of Total	Apportioned Cost
Land.....	\$245,000	35%	\$218,750
Building .....	350,000	50	312,500
Equipment.....	<u>105,000</u>	<u>15</u>	<u>93,750</u>
<b>Totals .....</b>	<b><u>\$700,000</u></b>	<b><u>100%</u></b>	<b><u>\$625,000</u></b>
Land ( $0.35 \times \$625,000$ ) .....		218,750	
Building ( $0.50 \times \$625,000$ ).....		312,500	
Equipment ( $0.15 \times \$625,000$ ) .....		93,750	
<b>Cash (or Notes Payable).....</b>			<b>625,000</b>
<i>Purchased land, building, and equipment.</i>			

**E 9–4 (LO3) Depreciation Calculations**

1. a. Straight-line method

$$2017: \frac{\$26,000 - \$1,000}{5 \text{ years}} = \$5,000 \times 1/2 \text{ year} = \$2,500$$

2018: \$5,000

- b. Units-of-production method

$$2017: \frac{\$26,000 - \$1,000}{110,000 \text{ miles}} \times 9,000 \text{ miles} = \$2,045$$

$$2018: \frac{\$26,000 - \$1,000}{110,000 \text{ miles}} \times 24,000 \text{ miles} = \$5,455$$

2. There is no definitive answer to the question of which depreciation method more closely reflects the used-up service potential of the car. If there is no obsolescence factor, then the asset probably would wear out based on use, for which the units-of-production method would appear to be more appropriate. If obsolescence is an important factor in determining the car's useful life, the car's service potential would probably decline on an accelerated basis because obsolescence affects a car's fair market value more when it is newer than when it is older. The decline in service potential would also be affected by the extent to which the maintenance policy assumed in selecting the five-year life is actually followed during the five-year period.

**E 9–5 (LO3) Depreciation Calculations**

1. Straight-line method:

Invoice cost .....	\$31,500
Installation .....	<u>400</u>
Total cost.....	<u>\$31,900</u>
Less salvage value.....	<u>1,900</u>
Depreciable amount.....	<u><u>\$30,000</u></u>

$$\frac{\$30,000}{15 \text{ years}} = \$2,000 \text{ per year}$$

2. Units-of-production method

$$\frac{\$30,000}{850,000 \text{ cans}} \times 51,000 \text{ cans} = \$1,800$$

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**E 9–6 (LO3) Depreciation Computations**

1.	2017: $10\% \times 1.5 = 15\%$ ; $15\% \times \$760,000 = \$114,000$	
	2018: $\$760,000 - \$114,000 = \$646,000$ ; $\$646,000 \times 15\% = \$96,900$	
	2019: $\$646,000 - \$96,900 = \$549,100$ ; $\$549,100 \times 15\% = \$82,365$	
2.	Original cost .....	\$760,000
	Accumulated depreciation ( $\$114,000 + \$96,900 + \$82,365$ ) .....	<u>293,265</u>
	Carrying amount at December 31, 2019 .....	<u><u>\$466,735</u></u>

**E 9–7 (LO3) Depreciation Calculations**

## 1. Double-declining-balance

$$\begin{aligned} 2017: \$62,800 \times (10\% \times 2) &= \$12,560 \\ 2018: (\$62,800 - \$12,560) \times 20\% &= 10,048 \end{aligned}$$

## 2. 150% declining-balance

$$\begin{aligned} 2017: \$62,800 \times (10\% \times 1.5) &= \$9,420 \\ 2018: (\$62,800 - \$9,420) \times 15\% &= 8,007 \end{aligned}$$

**E 9–8 (LO2, LO3) Computing Asset Cost and Depreciation Expense**

1.	Purchase price .....	\$32,000
	Sales tax.....	1,400
	Delivery costs.....	1,200
	Assembly cost.....	900
	Painting .....	<u>500</u>
	Total cost.....	<u><u>\$36,000</u></u>
2.	First full year's depreciation, straight-line method:	$\$36,000 / 16 \text{ years} = \$2,250$

**E 9–9 (LO2, LO3) Acquisition and Depreciation of Assets**

1. 2018

July 1 Drilling Equipment .....	230,000
Cash .....	230,000
<i>Purchased drilling equipment.</i>	

2. Straight-line =  $\frac{\$195,000 - \$7,000}{10 \text{ years}} \times 1/2 \text{ year}$

$$= \$18,800 \times 1/2 \text{ year} = \$9,400$$

**E 9–10 (LO2, LO3) Acquisition and Depreciation of Assets**

1. 2018

July 1 Drilling Equipment .....	185,000
Cash .....	185,000
<i>Purchased drilling equipment.</i>	

2. a. DDB =  $\$140,000 \times 0.10 \times 1/2 \text{ year}$

$$= \$14,000 \times 1/2 \text{ year}$$

$$= \$7,000$$

b. 150% DB =  $\$140,000 \times 0.075 \times 1/2 \text{ year}$

$$= \$10,500 \times 1/2 \text{ year}$$

$$= \$5,250$$

**E 9–11 (LO2, LO3) Acquisition and Depreciation**

1. Construction costs.....	\$15,000
Sales taxes on components .....	1,100
Delivery costs.....	700
Installation of motor.....	300
Painting .....	200
Total cost.....	<u>\$17,300</u>

**2. First full year's depreciation**

Double-declining-balance:  $(10\% \times 2) \times \$17,300 = \$3,460$

**E 9–12 (LO2, LO5) Acquisition and Improvement of Assets**

1. Machine.....	37,650
Cash.....	37,650

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**Purchased machine (\$35,000 cost + \$1,600 installation + \$1,750 sales tax – \$700 discount).**

2.	<b>Repairs and Maintenance Expense .....</b>	<b>350</b>
	<b>Cash.....</b>	<b>350</b>
	<i>To record repairs and maintenance expense on the machine.</i>	
3.	<b>Machine.....</b>	<b>500</b>
	<b>Cash.....</b>	<b>500</b>
	<i>Purchased a governor for the machine.</i>	

**E 9–13 (LO3, LO4) Accounting for Natural Resources**

1.	<b>2017</b>	
	<b>Jan. 1 Coal Mine .....</b>	<b>1,125,000</b>
	<b>Cash .....</b>	<b>1,125,000</b>
	<i>Purchased coal mine.</i>	
2.	<b>2017</b>	
	<b>Dec. 31 Depletion Expense .....</b>	<b>250,000</b>
	<b>Accumulated Depletion, Coal Mine .....</b>	<b>250,000</b>
	<i>To record depletion expense on the mine for 2017 (\$1,125,000/180,000 tons = \$6.25 per ton; \$6.25 × 40,000 tons).</i>	
3.	<b>January 1, 2018—No entry.</b>	
4.	<b>2018</b>	
	<b>Dec. 31 Depletion Expense .....</b>	<b>162,800</b>
	<b>Accumulated Depletion, Coal Mine .....</b>	<b>162,800</b>
	<i>To record depletion expense on the mine for 2018 (40,000 × \$4.07 per ton).</i>	

**Computation of new depletion rate:**

<b>Original cost .....</b>	<b>\$1,125,000</b>
<b>Less depletion in 2017 .....</b>	<b>250,000</b>
<b>Amount to be depleted .....</b>	<b><u>\$ 875,000</u></b>

$$\frac{\$875,000}{215,000 \text{ tons}} = \$4.07 \text{ per ton}$$

### E 9–14 (LO3, LO4) Change in Estimated Useful Life

Original depreciation:

$$\$120,000 - \$10,000 = \$110,000 / 10 \text{ years} = \$11,000 \text{ per year}$$

2017: \$11,000 depreciation expense

2018: \$11,000 depreciation expense

The change in estimate is calculated as follows:

$$\$11,000 \times 2 \text{ years} = \$22,000 \text{ (amount in accumulated depreciation)}$$

$$(\$120,000 - \$22,000) - \$10,000 = \$88,000 \text{ (new depreciable amount)}$$

$$\$88,000 / 6 \text{ years (remaining useful life)} = \$14,667$$

2019: \$14,667 depreciation expense

### E 9-15(LO3, LO4) Understanding Depreciation Concepts

1. False. Depreciation is a process of *cost allocation*, not *asset valuation*.
2. True.
3. False. The book value of a plant asset *may be quite different* from its fair value.
4. False. Depreciation applies to three classes of plant assets: land *improvements*, buildings, and equipment.
5. False. Depreciation does not apply to *land* because its usefulness and revenue-producing ability generally remain intact over time.
6. True.
7. False. Recognizing depreciation on an asset *does not result* in an accumulation of cash for replacement of the asset.
8. True.
9. False. Depreciation expense is reported on the income statement, and *accumulated depreciation is reported as a deduction from plant assets on the statement of financial position*.

10. True.

### E 9–16 (LO6) Asset Impairment

1.

	1	2	3
Original cost of asset.....	\$1,400	\$1,400	\$1,400
Accumulated depreciation .....	<u>400</u>	<u>400</u>	<u>400</u>

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<b>Carrying amount of the asset.....</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>
<b>Recoverable amount.....</b>	<b>1,500</b>	<b>1,500</b>	<b>900</b>

a. **Impaired?**    No    Yes

The recoverable amount is the higher between the value in use (present value of future net cash inflows) and the net fair value. The impairment test involves a comparison of the carrying amount of the asset with the recoverable amount. If the recoverable amount is less than the carrying amount, then the asset is impaired.

b. **Amount to be reported?**    \$1,000    \$1,000    \$900

If the asset is not impaired, then it continues to be reported at its carrying amount, as in Scenarios 1 and 2. If the asset is impaired, as in Scenario 3, then it is reported at its recoverable amount.

<b>2. Impairment Loss .....</b>	<b>100</b>
<b>Accumulated Impairment Losses .....</b>	<b>100</b>
<i>To record loss on impairment of asset.</i>	

**E 9–17 (LO6)    Asset Impairment**

The impaired value of the land and building must be recognized. The journal entry on January 1, 2018, would be:

<b>Impairment Loss, Land (\$150,000 – \$50,000).....</b>	<b>100,000</b>
<b>Impairment Loss , Building (\$400,000 – \$70,000) .....</b>	<b>330,000</b>
<b>Accumulated Impairment Losses, Land .....</b>	<b>100,000</b>
<b>Accumulated Impairment Losses, Building.....</b>	<b>330,000</b>
<i>To record loss on impairment of land and building.</i>	

**E 9–18 (LO8)    Disposal of an Asset**

<b>1. Cash .....</b>	<b>42,000</b>
<b>Accumulated Depreciation, Truck .....</b>	<b>22,500</b>
<b>Truck.....</b>	<b>60,000</b>
<b>Gain on Sale of Truck .....</b>	<b>4,500</b>
<i>Sold truck at a gain (Accumulated depreciation = \$60,000/8 = \$7,500; \$7,500 × 3 = \$22,500).</i>	
<b>2. Cash .....</b>	<b>35,000</b>
<b>Accumulated Depreciation, Truck .....</b>	<b>22,500</b>
<b>Loss on Sale of Truck .....</b>	<b>2,500</b>
<b>Truck.....</b>	<b>60,000</b>
<i>Sold truck at a loss.</i>	

3.	<b>Accumulated Depreciation, Truck .....</b>	22,500
	<b>Loss on Disposal of Truck .....</b>	37,500
	<b>Truck.....</b>	
	<i>Scrapped truck.</i>	60,000

**E 9-19 (LO8)      Disposal of an Asset**

1.	<b>Cash .....</b>	97,000
	<b>Accumulated Depreciation, Machine*</b>	27,000
	<b>Machine .....</b>	115,000
	<b>Gain on Sale of Machine .....</b>	9,000
	<i>Sold machine.</i>	

$$\frac{\text{*\$115,000} - \text{\$7,000}}{8 \text{ years}} = \$13,500 \text{ per year}; \$13,500 \times 2 = \$27,000$$

2.	<b>Cash .....</b>	36,000
	<b>Accumulated Depreciation, Machine*</b>	67,500
	<b>Loss on Sale of Machine .....</b>	11,500
	<i>Machine .....</i>	115,000
	<i>Sold machine.</i>	

$$\text{*\$13,500} \times 5 = \$67,500$$

**E 9-20(LO8) Accounting for Disposal of Equipment**

(a)	<b>Cash.....</b>	56,000
	<b>Accumulated Depreciation—Equipment</b>	
	$\text{[(\$100,000} - \text{\$16,000}) \times 3/5]$ .....	50,400
	<i>Equipment .....</i>	100,000
	<i>Gain on Disposal of Plant Assets.....</i>	6,400
(b)	<b>Depreciation Expense</b>	
	$\text{[(\$100,000} - \text{\$16,000}) \times 1/5 \times 4/12]$ .....	5,600
	<i>Accumulated Depreciation—Equipment.....</i>	5,600
	<b>Cash.....</b>	56,000
	<b>Accumulated Depreciation—Equipment</b>	
	$(\$50,400 + \$5,600)$ .....	56,000
	<i>Equipment .....</i>	100,000
	<i>Gain on Disposal of Plant Assets.....</i>	12,000
(c)	<b>Cash .....</b>	22,000

<b>Accumulated Depreciation—Equipment.....</b>	<b>50,400</b>
<b>Loss on Disposal of Plant Assets .....</b>	<b>27,600</b>
<b>Equipment.....</b>	100,000
<b>(d) Depreciation Expense</b>	
$[(\$100,000 - \$16,000) \div 5 \times 9/12]$ .....	12,600
<b>Accumulated Depreciation—Equipment.....</b>	12,600
<b>Cash .....</b>	<b>22,000</b>
<b>Accumulated Depreciation—Equipment</b>	
$(\$50,400 + \$12,600)$ .....	63,000
<b>Loss on Disposal of Plant Assets .....</b>	<b>15,000</b>
<b>Equipment.....</b>	100,000

**E 9–21 (LO9)      Accounting for Intangible Assets****1. Journal entries**

<b>Amortization Expense, Patent.....</b>	<b>9,100</b>
<b>Patent.....</b>	9,100
<i>To record amortization expense on the patent for 2018 (\$182,000/20 years = \$9,100 per year).</i>	

Goodwill is not amortized.

**2. Partial balance sheet**

**Cervantes Labs, Inc.**  
**Partial Balance Sheet**  
**December 31, 2018**

**Intangible assets:**

<b>Goodwill .....</b>	<b>\$ 26,000</b>
<b>Patent (cost \$182,000).....</b>	<b>109,200</b>
<b>Total intangible assets .....</b>	<b><u>\$135,200</u></b>

**Computations:**

Patent:  $\$9,100 \times 8 \text{ years} = \$72,800$ ;  $\$182,000 - \$72,800 = \$109,200$

**E 9–22 (LO9) Intangible Assets**1. **2018**

Jan. 1 Patent .....	250,000
Cash .....	250,000

*To record purchase of a patent.*2. **2018**

Dec. 31 Amortization Expense, Patent.....	12,500
Patent.....	12,500

*To record amortization expense of patent  
(\$250,000 ÷ 20 years).*

3. Goodwill is never amortized. Each year, goodwill would be evaluated to ensure that the amount recorded on the books of the company is not overstated. If goodwill is overstated, then it could be written down based on the results of impairment tests.

**E 9–23 (LO9) Computing Goodwill**

1. The assets will be recorded at their fair values as follows:

Cash .....	£ 30,000
Accounts receivable .....	300,000
Inventory .....	600,000
Property, plant, and equipment .....	900,000

2. Liabilities will be recorded on Stringtown's books at £400,000.

3. The market value of the net assets acquired is £1,430,000 (£1,830,000 – £400,000). The excess purchase price is £370,000 (£1,800,000 – £1,430,000), which must be allocated to goodwill.

Goodwill will be recorded at £370,000.

**E 9–24 (LO10) Fixed Asset Turnover**

	<u>2018</u>	<u>2017</u>
Land.....	\$ 350,000	\$ 310,000
Buildings.....	740,000	680,000
Equipment.....	<u>140,000</u>	<u>120,000</u>
Total property, plant, and equipment .....	<u>\$1,230,000</u>	<u>\$1,110,000</u>

$$\begin{aligned} \text{Fixed asset turnover} &= \text{Sales}/\text{Average fixed assets} \\ &= \$3,650,000/[(\$1,230,000 + \$1,110,000)/2] = 3.12 \end{aligned}$$

## PROBLEMS

**P9-1(LO2) Determining Acquisition Costs of Land and Building**

<u>Item</u>	<u>Land</u>	<u>Buildings</u>	<u>Other Accounts</u>
1	\$ 13,200		
2		\$1,560,000	
3			\$ 10,000 Property Taxes Expense
4	290,000		
5		70,000	
6		20,500	
7	5,600		
8			28,000 Land Improvements
9	30,000		
10	<u>(7,200)</u>	<u>\$1,650,500</u>	
	<u>(\$331,600)</u>		

**P 9–2 (LO3) Accounting for Natural Resources**

1. Oil Well .....	2,000,000	
Cash .....		2,000,000
<i>Purchased oil well on May 31, 2017.</i>		
2. Depletion Expense .....	160,000	
Accumulated Depletion, Oil Well .....		160,000
<i>To record depletion expense (at \$10 per barrel) on the oil well for 2017.</i>		
3. Depletion Expense .....	210,000	
Accumulated Depletion, Oil Well .....		210,000
<i>To record depletion expense (at \$10 per barrel) on the oil well for 2018.</i>		

**P 9–3 (LO3) Financial Statement Effects of Depreciation Methods**

1.

	<u>Straight- Line</u>	<u>Double-Declining- Balance</u>
2017 (1/2 year) .....	\$10,000	\$24,000
2018 .....	20,000	38,400
2019 .....	<u>20,000</u>	<u>23,040</u>
<b>Totals (2017–2019) .....</b>	<b><u>\$50,000</u></b>	<b><u>\$85,440</u></b>

**Computations:**

**Straight-line depreciation:**  $(\$120,000 - \$20,000)/5 = \$20,000 \text{ per year}$

**Double-declining-balance:**  $1/5 \times 2 = 40\% \text{ rate}$

**2017:**  $\$120,000 \times 40\% \times 1/2 = \$24,000$

**2018:**  $(\$120,000 - \$24,000) \times 40\% = \$38,400$

**2019:**  $(\$120,000 - \$24,000 - \$38,400) \times 40\% = \$23,040$

**2. Carrying amounts at end of 2019:**

**Straight-line:**  $\$120,000 - \$50,000 = \$70,000$

**Double-declining-balance:**  $\$120,000 - \$85,440 = \$34,560$

- 3.** The straight-line method produces the lowest depreciation from 2017 to 2019, and the double-declining-balance method results in the highest amount of depreciation. Therefore, net income would be highest using the straight-line method and lowest using the double-declining-balance method.

**P 9–4 (LO3) Depreciation Calculations**

1. Straight-line method:

$$\frac{\$47,000 - \$2,000}{10 \text{ years}} = \$4,500 \text{ per year}$$

<u>Year</u>	<u>Depreciation Expense</u>	<u>Carrying Amount</u>		
2017	\$4,500 × 2/3 year = \$3,000	\$47,000	–	\$3,000 = \$44,000
2018	\$4,500	44,000	–	4,500 = 39,500

2. Units-of-production method:

$$\frac{(\$47,000 - \$2,000)}{25,000 \text{ hours}} = \$1.80 \text{ per hour} \times 1,800 \text{ hours} = \$3,240$$

$$\frac{(\$47,000 - \$2,000)}{25,000 \text{ hours}} = \$1.80 \text{ per hour} \times 2,900 \text{ hours} = \$5,220$$

<u>Year</u>	<u>Depreciation Expense</u>	<u>Carrying Amount</u>		
2017	\$3,240	\$47,000	–	\$3,240 = \$43,760
2018	\$5,220	43,760	–	5,220 = 38,540

3. The straight-line method would be used in order to report the highest income in 2017 and 2018 combined. Because straight-line depreciation provides the smallest amount of depreciation expense in early years, net income would be higher with this method than with the others.

**P 9–5 (LO2, LO3) Acquisition of an Asset**

1. Invoice price .....	\$184,250
Discount.....	3,685
Net purchase price .....	\$180,565
Delivery .....	3,000
Insurance .....	1,200
Installation .....	3,400
Start-up costs .....	655
Total cost.....	<u>\$188,820</u>

2. Additional information needed in order to compute the first year's depreciation expense would be:

Depreciation method to be used

Salvage value of the press

Estimated life of the press

3. The relevant criterion is that all costs incurred to get an asset ready for its intended use should be included in the total cost of the asset. If the start-up costs represent testing or getting the machine in working order, they should be included. If they represent the first production of salable products, they should not be included.

**P 9–6 (LO2, LO3) Purchase of Multiple Assets for a Single Sum**

1. Purchase price ..... **\$210,000**

**Market values:**

Land.....	\$ 70,000
Building.....	120,000
Equipment.....	<u>60,000</u>
Total .....	<b>\$250,000</b>

**Allocate cost to assets based on relative fair market values:**

Cost of land:      \$70,000/\$250,000 × \$210,000 =	\$ 58,800
Cost of building:    \$120,000/\$250,000 × \$210,000 =	100,800
Cost of equipment:    \$60,000/\$250,000 × \$210,000 =	<u>50,400</u>
	<b>\$210,000</b>

2. Land..... 58,800  
 Building..... 100,800  
 Equipment..... 50,400  
 Cash..... 210,000

*Purchased assets for a single sum, with cost allocated based on fair market values.*

3. Land..... 12,000  
 Building..... 14,000  
 Equipment..... 3,500  
 Cash..... 29,500

*Incurred and paid expenditures to clear the land title, landscape, repair the equipment, and renovate the building.*

4. 2018  
 Dec. 31 Depreciation Expense ..... 9,705  
     Accumulated Depreciation, Building ..... 3,930  
     Accumulated Depreciation, Equipment ..... 5,775

*To record depreciation expense for 2018.*

Building:  $\frac{\$100,800 + \$14,000 - \$10,000}{20 \text{ years}} \times \frac{3}{4} \text{ year} = \$3,930$

Equipment:  $\frac{\$50,400 + \$3,500}{7 \text{ years}} \times \frac{3}{4} \text{ year} = \$5,775$

**Chapter 9**
**P 9–7 (LO2, LO3) Basket Purchase and Partial-Year Depreciation**

1. <u>Asset</u>	<u>Fair Market Value</u>	<u>Percentage</u>	<u>Cost</u>	<u>Allocated Cost</u>
Land	\$ 75,000	33.3333%	× \$200,000	= \$ 66,667
Building	100,000	44.4444	× 200,000	= 88,889
Equipment	50,000	22.2222	× 200,000	= 44,444
Totals	<u>\$225,000</u>			<u>\$200,000</u>
Land.....				66,667
Building.....				88,889
Equipment.....				44,444
Cash.....				200,000

*Purchased assets as a group and allocated the single-sum cost among the assets based on relative fair market values.*

**2. Depreciation of assets:**

$$\text{Building: } \frac{\$88,889}{20 \text{ years}} = \$4,444 \times 3/4 = \$3,333$$

$$\text{Equipment: } \frac{\$44,444}{5 \text{ years}} = \$8,889 \times 3/4 = \$6,667$$

**P 9–8 (LO3, LO4, LO5) Changes in Depreciation Estimates and Capitalization of Expenditures**
**1. a. 2017**

Jan. 2 Machine .....	76,600
Cash.....	76,600

*Purchased a machine for cash.*

**b. 2017**

Dec. 31 Depreciation Expense .....	19,150
Accumulated Depreciation, Machine .....	19,150
<i>To record depreciation expense for 2017</i>	
<i>[1/8 × 2 = 0.25]</i>	
<i>[\$76,600 × 0.25 = \$19,150].</i>	

**2018**

Dec. 31 Depreciation Expense .....	14,363
Accumulated Depreciation, Machine .....	14,363
<i>To record depreciation expense for 2018</i>	
<i>[(\$76,600 - \$19,150) × 0.25 = \$14,363].</i>	

**c. 2019**

Dec. 31 Depreciation Expense .....	21,544
Accumulated Depreciation, Machine .....	21,544
<i>To record depreciation expense for 2019 after change in estimates.</i>	
Cost of machine .....	\$76,600
Depreciation, 2017 and 2018 .....	<u>33,513</u>
Carrying amount at January 1, 2019 .....	<u>\$43,087</u>

$1/4 \times 2 = 0.5$

Depreciation =  $0.5 \times \$43,087 = \$21,544$

d. 2020

Jan. 2 Machine .....	34,000
Cash .....	34,000
<i>To record the cost of major repairs that increased machine's useful life by two years and increased its salvage value to \$3,000.</i>	

e. 2020

Dec. 31 Depreciation Expense .....	22,217
Accumulated Depreciation, Machine .....	22,217
<i>To record depreciation expense for 2020.</i>	
Carrying amount at January 1, 2019 .....	\$43,087
Depreciation for 2019 .....	<u>21,544</u>
Carrying amount at January 1, 2020 .....	<u>\$21,543</u>
Cost of major repairs in 2020.....	<u>34,000</u>
Carrying amount after major repairs.....	<u>\$55,543</u>

Remaining estimated life:

3 years (before repairs) + 2 additional years = 5 years

$1/5 \times 2 = 0.4$

Depreciation =  $0.4 \times \$55,543 = \$22,217$

2. Carrying amount at December 31, 2020:  $\$55,543 - \$22,217 = \$33,326$

**P 9–9 (LO3, LO4, LO5) Unifying Concepts: Accounting for Natural Resources**

1. a. 2017

Jan. 1 Timber Tract .....	800,000
Cash .....	800,000
<i>Purchased timber tract.</i>	

2018

Jan. 1 Silver Mine .....	600,000
Cash .....	600,000
<i>Purchased silver mine.</i>	

## Chapter 9

2018			
July 1	Uranium Mine.....	60,000	
	Cash.....		60,000
	<i>Purchased uranium mine.</i>		
2019			
Jan. 1	Oil Well.....	500,000	
	Cash.....		500,000
	<i>Purchased oil well.</i>		
b. (1)	Depletion Expense.....	100,000 <sup>a</sup>	
	Accumulated Depletion, Timber Tract.....		100,000
(2)	Depletion Expense.....	100,000 <sup>b</sup>	
	Accumulated Depletion, Silver Mine.....		100,000
(3)	Depletion Expense.....	12,000 <sup>c</sup>	
	Accumulated Depletion, Uranium Mine ...		12,000
(4)	Depletion Expense.....	50,000 <sup>d</sup>	
	Accumulated Depletion, Oil Well.....		50,000
	<i>To record the depletion expense on all natural resources for 2019.</i>		

**Calculations:**

a  $\frac{\$800,000}{1,600,000 \text{ feet}} = \$0.50 \text{ per foot}; 200,000 \text{ board feet} \times \$0.50 = \$100,000$

b  $\frac{\$600,000}{30,000 \text{ tons}} = \$20 \text{ per ton}; 5,000 \text{ tons} \times \$20 = \$100,000$

c  $\frac{\$60,000}{5,000 \text{ tons}} = \$12 \text{ per ton}; 1,000 \text{ tons} \times \$12 = \$12,000$

d  $\frac{\$500,000}{100,000 \text{ barrels}} = \$5 \text{ per barrel}; 10,000 \text{ barrels} \times \$5 = \$50,000$

2. Total depletion before 2020:    20,000 tons  

$$\begin{array}{r} \times \$20 \text{ per ton} \\ \hline \$400,000 \end{array}$$

Cost.....	<b>\$600,000</b>
Depletion.....	<b>400,000</b>
Remaining.....	<b>\$200,000</b>

$\div 4,000 \text{ tons} = \$50 \text{ per ton}$

2020		
Dec. 31 Depletion Expense .....	100,000	
Accumulated Depletion, Silver Mine .....		100,000
<i>To record depletion expense on the silver mine—2,000 tons at \$50 per ton.</i>		

**P 9–9 (LO3, LO4, LO5) (Continued)****3. Carrying amounts**

<u>Resources</u>	<u>Cost</u>	<u>Total Depletion</u>		<u>Carrying Amount</u>
a. Timber.....	\$800,000	800,000	× \$ 0.50 =	\$400,000
b. Silver.....	600,000	{ 20,000	× \$20.00 = 400,000	100,000
		2,000	× \$50.00 = 100,000	
c. Uranium .....	60,000	3,000	× \$12.00 = 36,000	24,000
d. Oil.....	500,000	80,000	× \$ 5.00 = 400,000	100,000

**P 9–10 (LO6) Asset Impairment**

- According to IFRS, first of all, the company has to judge if there is any indication for impairment. The factory in this example shows indication of impairment. Then, Delta Company has to estimate the recoverable amount, which is the higher value between the value in use (the present value of future net cash inflows) and the net fair value. If the recoverable amount is less than the carrying amount of the asset, the asset is impaired.
- The value in use is \$2,000,000. The net fair value is \$1,300,000. Thus, the recoverable amount is \$2,000,000. The recoverable amount is less than the \$2,400,000 carrying amount of the factory, so an impairment loss should be recognized.

The factory must be written down to its fair value. The necessary journal entry is as follows:

<b>Impairment Loss .....</b>	<b>400,000</b>
<b>Accumulated Impairment Losses.....</b>	<b>400,000</b>

*To record asset impairment of Lagos factory.*

**P 9–11 (LO2, LO3, LO8) Acquisition, Depreciation, and Disposal of Assets**

- Cost of building:  $\$420,000/\$600,000 = 0.70$   
 $\$580,000 \times 0.70 = \$406,000$

Cost of land:  $\$180,000/\$600,000 = 0.30$   
 $\$580,000 \times 0.30 = \$174,000$

**a. 2018**

<b>Jan. 2 Building .....</b>	<b>406,000</b>
<b>Land .....</b>	<b>174,000</b>

	<b>Cash.....</b>	<b>580,000</b>
<i>Purchased land and building.</i>		
b. 2018		
Dec. 31	<b>Depreciation Expense .....</b>	<b>15,040</b>
	<b>Accumulated Depreciation, Building .....</b>	<b>15,040</b>
	<i>To record depreciation expense on the building for 2018 [(\$406,000 – \$30,000)/25 years = \$15,040].</i>	
2. Cash .....	470,000	
Accumulated Depreciation, Building.....	60,160	
Loss on Sale of Building and Land .....	49,840	
Building .....		406,000
Land .....		174,000
<i>Sold property at a loss.</i>		
Calculation of loss:		
Original cost.....		\$580,000
Less accumulated depreciation (\$15,040 × 4 years).....		60,160
Carrying amount.....		\$519,840
Less sales price .....		470,000
Loss .....		\$ 49,840

**P 9–12 (LO2, LO3, LO8) Acquisition, Depreciation, and Sale of an Asset**

1. 2017		
Jan. 2	Airplane.....	114,000
<i>Purchased airplane (\$112,000 – \$3,000 + \$4,000 + \$1,000).</i>		
2. Units-of-production method		
$\frac{\$90,000 - \$3,000}{1,500 \text{ hours}} = \$58 \text{ per hour}; \$58 \times 300 \text{ hours} = \$17,400$		
3. 2020		
July 1	Depreciation Expense .....	8,500
	Accumulated Depreciation, Airplane.....	8,500
<i>To record depreciation expense for the period from January 1, 2020, to July 1, 2020, bringing depreciation up to date before recording the sale of the airplane (\$17,000 × 1/2 year).</i>		

**Note:** No depreciation has yet been recorded for 2020, which is now recorded by this entry  $(\$90,000 - \$5,000) \times 1/5 \times 1/2 \text{ year} = \$8,500$ .

July 1 Cash.....	40,000
Accumulated Depreciation, Airplane .....	59,500
Airplane.....	90,000
Gain on Sale of Airplane.....	9,500
<i>Sold airplane for \$40,000 cash on July 1, 2020.</i>	

**P 9–13(LO2, LO3, LO8) Acquisition, Depreciation, and Sale of an Asset**

**1. a. 2017**

July 1 Truck.....	6,100
Cash.....	6,100
<i>Purchased truck (\$5,300 + \$800).</i>	

**b. 2017**

Dec. 31 Depreciation Expense .....	950
Accumulated Depreciation, Truck.....	950
<i>To record depreciation expense on the truck for 2016 [(\$6,100 cost – (\$450-\$50) net salvage value) ÷ 3 years = \$1,900; \$1,900 × 1/2 year = \$950].</i>	

**c. 2018**

Dec. 31 Depreciation Expense .....	1,900
Accumulated Depreciation, Truck.....	1,900
<i>To record depreciation expense on the truck for 2017.</i>	

**d. 2019**

Jan. 2 Cash.....	2,600
Accumulated Depreciation, Truck.....	2,850
Loss on Sale of Truck.....	650
Truck.....	6,100
<i>Sold truck for \$2,600 cash.</i>	

2. 
$$\frac{\$6,100 - \$400}{40,000 \text{ miles}} \times 8,000 \text{ miles} = \$1,140$$

3. The loss of \$650 in part (1)d occurred because the carrying amount of the truck at the date of sale was \$3,250 ( $\$6,100 - \$2,850$ ), which was higher than the sale price of \$2,600. This shows that depreciation is not a method of valuation but rather a process of allocating an asset's cost over its life. In this case, the market and carrying amounts of the truck were significantly different because the original estimates of useful life and salvage value were not totally accurate.

## Chapter 9

**P 9–14 (LO3, LO8) Depreciation Calculations**

1. a. Straight-line method:

$$\frac{\$79,000 - \$4,000}{4 \text{ years}} = \$18,750 \text{ per year}$$

- b. Units-of-production method:

$$\frac{\$79,000 - \$4,000}{90,000 \text{ units}} = \$0.833 \text{ per unit}$$

$$\$0.833 \times 25,000 \text{ units} = \$20,825$$

2.  $\$79,000 - \$18,750 = \$60,250$

3. Sale price .....	\$20,000
Original cost .....	<u>\$79,000</u>
Less depreciation ( $\$18,750 \times 3 \text{ years}$ ) .....	<u>56,250</u>
Carrying amount .....	<u>22,750</u>
Loss.....	<u><u><math>\\$ (2,750)</math></u></u>

**P 9–15 (LO9) Accounting for Intangible Assets (Goodwill)**

2018

Jan. 1 Inventory .....	70,000
Building .....	130,000
Land .....	90,000
Accounts Receivable .....	30,000
Goodwill .....	20,000
Accounts Payable .....	15,000
Cash .....	325,000

*Purchased assets and liabilities of Immensity Company.*

**P 9–16 (LO9) Accounting for Goodwill**

- The trademark will be recorded at \$2,000,000, the fair market value of the trademark on the date of the acquisition.
- The fair market value of the net assets is \$1,700,000 (\$5,700,000 – \$4,000,000). The excess purchase price is \$7,100,000 (\$8,800,000 – \$1,700,000), which must be allocated to goodwill.  
Goodwill will be recorded at \$7,100,000.
- Skull Valley's recorded equity immediately before the acquisition was a negative \$950,000 (\$3,050,000 assets – \$4,000,000 liabilities). In this case, the value of Skull Valley stemmed from its \$2 million trademark and \$7.1 million in goodwill, both of which were not reported at all because Skull Valley had developed the assets itself. Book value of stockholders' equity is a poor

measure of the fair value of a company when the company has many unrecorded intangible assets.

**P 9-17 (LO10) Calculating and Commenting on Asset Turnover**

(a)	Champagne	Ardenne
Asset turnover	$\frac{\$620,000}{\$1,000,000} = .62 \text{ times}$	$\frac{\$555,000}{\$750,000} = .74 \text{ times}$

(b) Based on the asset turnover, Ardenne is more effective in using assets to generate sales. Its asset turnover is more than 19% higher than Champagne's ratio.

**P 9-18 (LO10) Fixed Asset Turnover Ratio**

1.

	<u>2018</u>	<u>2017</u>
Land.....	\$ 300,000	\$ 200,000
Buildings.....	800,000	600,000
Equipment.....	400,000	300,000
Total cost .....	<u>\$1,500,000</u>	<u>\$1,100,000</u>

Fixed asset turnover:  $\$4,000,000 / [(\$1,500,000 + \$1,100,000)/2] = 3.08$

2. Fair value of fixed assets: Fair value of total assets – Cash – Accounts receivable – Inventory (at fair value) = Fair value of fixed assets

**Note:** The fair value adjustments for the inventory relate to current assets instead of long-term assets. Also, it is reasonable to assume that the fair value of cash and accounts receivable are close to their carrying amounts.

2018:  $\$3,500,000 - \$40,000 - \$500,000 - \$700,000 - \$100,000 = \$2,160,000$

2017:  $\$2,500,000 - \$30,000 - \$400,000 - \$500,000 - \$50,000 = \$1,520,000$

Fixed asset turnover:  $\$4,000,000 / [(\$2,160,000 + \$1,520,000)/2] = 2.17$

3. It is difficult to tell whether Waystation is more or less efficient than Handy Corner at using its fixed assets. Based on the reported financial numbers, Waystation's fixed asset turnover is 3.08 whereas the ratio for Handy Corner is only 2.8. However, as shown in part (2), this difference may be because of a difference between carrying amount and fair value of reported long-term assets. If Handy Corner has relatively new fixed assets, for which the carrying amount is quite close to the fair value, then Waystation's 2.17 fixed asset turnover ratio, based on fair values, is worse than the 2.8 ratio value for Handy Corner.

## ANALYTICAL ASSIGNMENTS

### **AA 9–1 Intangible Assets**

#### **Discussion**

Goodwill can be recorded only when purchased. If the management of Renford Company believes that the Tacoma restaurant is failing, it should perform a goodwill impairment test to see whether it needs to write down goodwill for that restaurant. Recognizing goodwill on the Seattle restaurant's books is not allowed.

### **AA 9–2 TSMC**

#### **Real Company Analysis**

1. Using the information about the estimated service lives above and information in note 15, we can approximately estimate how old is the company's property, plant, and equipment. (Since TSMC didn't mention the proportion of land equipment in "Land and Land Equipment", we couldn't calculate how old the land equipment is.)

**(Units: thousands of NT\$)**

	Balance at estimated cost, December 31, 2015	service lives (in average)	depreciation expense per year
<b>Buildings</b>	\$296,801,864	12.5	\$23,744,149
<b>Machinery and equipment</b>	1,893,489,604	3.5	540,997,030
<b>Office equipment</b>	30,700,049	9	3,411,116
<b>Leased assets</b>	7,113	20	356

Buildings:  $\$157,910,155 / \$23,744,149 = 6.7 \text{ years}$

Machinery and equipment:  $\$1,385,857,655 / \$540,997,030 = 2.6 \text{ years}$

Office equipment:  $\$19,426,069 / \$3,411,116 = 5.7 \text{ years}$

Leased assets:  $\$7,113 / \$356 = 20 \text{ years}$

## EXPANDED MATERIALS

### Discussion Questions

- 18.** Companies can record a gain or loss on the exchange when the exchanges have commercial substance. An exchange has commercial substance if the future cash flows change as a result of the exchange. Because the timing and amount of cash flows generated from the use of assets will change; and therefore, the exchange has commercial substance, and the companies recognize a gain or loss in the exchange.
- 19.** The measurement of the fair value needs estimation, and it is less reliable because the estimation sometimes depends on experience and judgments. Moreover, the management might manipulate the earnings due to the estimation of the fair value.

**Exercises****E 9-25 (LO11) Recording Exchange of Property, Plant and Equipment**

Machine B (NT\$250,000 + NT\$100,000) .....	350,000
Accumulated Depreciation, Machine A .....	520,000
Loss on Disposal of Machine (NT\$250,000 - NT\$480,000)	230,000
Machine A .....	1,000,000
Cash .....	100,000

*To record exchange of used machine for a new machine*

**E 9-26 (LO11) Recording Exchange of Property, Plant and Equipment**

Truck (New) (NT\$50,000 + NT\$350,000) .....	400,000
Accumulated Depreciation, Truck (Old) .....	500,000
Truck (Old) .....	800,000
Gain on Disposal of Truck (NT\$350,000-NT\$300,000)..	50,000
Cash .....	50,000

*To record exchange of used machine for a new machine*

**E 9-27(LO12) Determining the Revaluation Surplus**

Accumulated Depreciation-Machine.....	50,000
Machine .....	30,000
Revaluation surplus .....	20,000
<i>To record adjusting the machine to fair value.</i>	

**E 9-28(LO12) Determining the Revaluation Surplus**

(a)	January 1, 2017	
	Equipment .....	60,000
	Cash.....	60,000
December 31, 2017		
	Depreciation Expense .....	10,000
	Accumulated Depreciation, Equipment.....	10,000
(b)	December 31, 2018	
	Depreciation Expense .....	10,000
	Accumulated Depreciation, Equipment.....	10,000

<b>Accumulated Depreciation, Equipment .....</b>	<b>20,000</b>
<b>Equipment.....</b>	<b>10,000</b>
<b>Revaluation Surplus.....</b>	<b>10,000</b>

## SOLUTIONS TO “STOP & THINK”

**Stop & Think (p. 377):** Do you think businesses would prefer an impairment test involving only the comparison of the carrying amount of an asset to its net fair value? Explain.

According to IAS 16, a company should perform an impairment test by comparing the carrying amount of the asset with its recoverable amount. The recoverable amount of an asset is the higher of net fair value of the asset or value in use of the asset, and that's why it is called two-step impairment test. If a company uses the one-step impairment test, it would directly compare the carrying amount with the net fair value. Companies would not prefer this approach since it may cause more impairment losses to be recorded. For example, if the amount of value in use is higher than the net fair value, a company would recognize more impairment loss if it only compares the carrying amount with the net fair value. As another example, if the amount of value in use is higher than the carrying amount, but the net fair value is lower than the carrying amount, the carrying amount of the asset would remain under the two-step impairment test. But if the company only compares the carrying amount with the net fair value, it would have to recognize impairment loss.