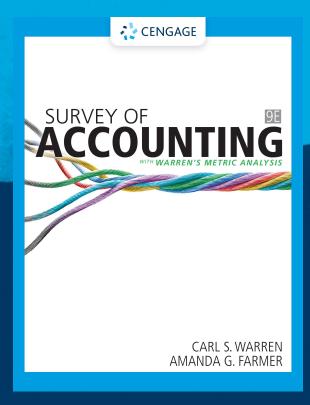
Survey of Accounting, 9e

Carl S. Warren and Amanda G. Farmer





Chapter 7

Fixed Assets, Natural Resources, and Intangible Assets



Learning Objectives

- Define, classify, and account for the cost of fixed assets
- Compute depreciation using the straight-line and double-declining-balance methods
- Describe the accounting for the disposal of fixed assets
- Describe the accounting for natural resources
- Describe the accounting for intangible assets
- Describe the reporting of fixed assets, natural resources, and intangible assets on the income statement and balance sheet
- Describe and illustrate asset turnover in assessing a company's operating results



ansr9

The LO description for LO 4 as per per page 296 is "Describe the accounting for depletion of natural resources." whereas the description as per page 278 is "Describe the accounting for natural resources." Please let us know which one is final.

ansrsource, 11/19/2019

Learning Objective 1

Define, classify, and account for the cost of fixed assets



Fixed Assets

- Long-term or relatively permanent assets
 - Examples: Equipment, machinery, buildings, and land
- Characteristics
 - Tangible assets
 - Owned and used by the company in its normal operations
 - Not offered for sale as part of normal operations



Exhibit 2: Classifying Costs

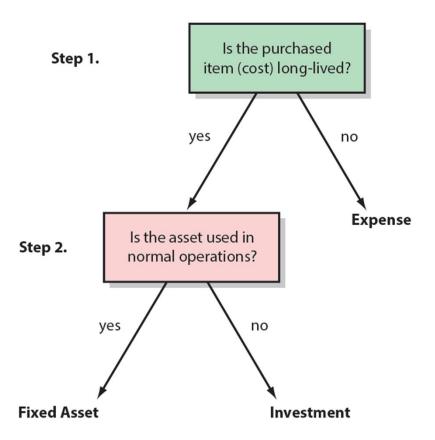




Exhibit 3: Costs of Acquiring Fixed Assets

Building

- · Architects' fees
- Engineers' fees
- Insurance costs incurred during construction
- Interest on money borrowed to finance construction
- Walkways to and around the building
- Sales taxes
- · Repairs (purchase of existing building)
- Reconditioning (purchase of existing building)
- Modifying for use
- Permits from government agencies

Machinery & Equipment

- Sales taxes
- Freight
- Installation
- Repairs (purchase of used equipment)
- Reconditioning (purchase of used equipment)
- Insurance while in transit.
- Assembly
- · Modifying for use
- Testing for use
- Permits from government agencies

Land & Land Improvements

- Purchase price
- Sales taxes
- Permits from government agencies
- · Broker's commissions
- Title fees
- Surveying fees
- Delinquent real estate taxes
- Removing unwanted buildings, less any salvage
- Grading and leveling
- Paving a public street bordering the land
- Trees and shrubs
- · Paved parking areas
- Outdoor lighting
- Fences



Illustration: Southwest Needle Inc.

- Southwest Needle Inc. purchased the following equipment on June 5:
 - All costs were paid in cash

Purchase price	\$30,000
Freight costs (FOB shipping point)	1,100
Installation costs	2,750 *

^{*} Includes cost of \$900 incurred to repair equipment damaged during installation.



Transaction Metrics

Liquidity metric: Free cash flow

Free Cash Flow = Operating Cash Flows – Investing Cash Flows

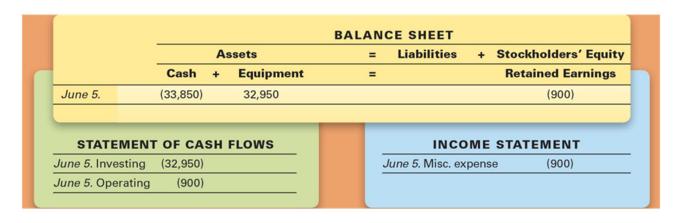
Profitability metric: Asset turnover

$$Asset Turnover = \frac{Sales}{Average Long-Term Operating Assets}$$



Effects of Purchasing the Equipment on the Financial Statements of Southwest Needle Inc.

Financial statement effects



Transaction metric effects





Fixed Asset Leases

- Lease: Contract for the use of an asset for a period of time
- Parties to a lease contract
 - Lessor
 - Lessee
- Assumed to be short-term and rental contracts not to extend beyond a year
 - Lease payments are recorded as Rent Expense
- Lease terms are normally disclosed in notes to financial statements



Learning Objective 2

Compute depreciation using the straight-line and double-decliningbalance methods



Accounting for Depreciation

- Depreciation: Periodic recording of the cost of fixed assets as an expense
 - Caused by:
 - Physical depreciation factors
 - Functional depreciation factor
 - Land is not depreciated as it has unlimited life



Accounting for Depreciation (continued)

- Misunderstandings regarding depreciation
 - Depreciation does not measure a decline in the market value of a fixed asset
 - Book value of a fixed asset does not agree with the asset's market value
 - Depreciation does not provide cash to replace fixed assets as they wear out
 - · Does not require an outlay of cash when it is recorded



Factors in Computing Depreciation Expense for a Fixed Asset

Initial Cost

Expected Useful Life

Estimated Residual Value



Computing Depreciation Expense

- Depreciable cost: Amount of an asset's cost that is allocated over its useful life as depreciation expense
 - If a fixed asset has no residual value, then its entire cost should be allocated to depreciation



Depreciation Methods

Straight-Line Depreciation

DoubleDecliningBalance
Depreciation



Exhibit 4: Depreciation

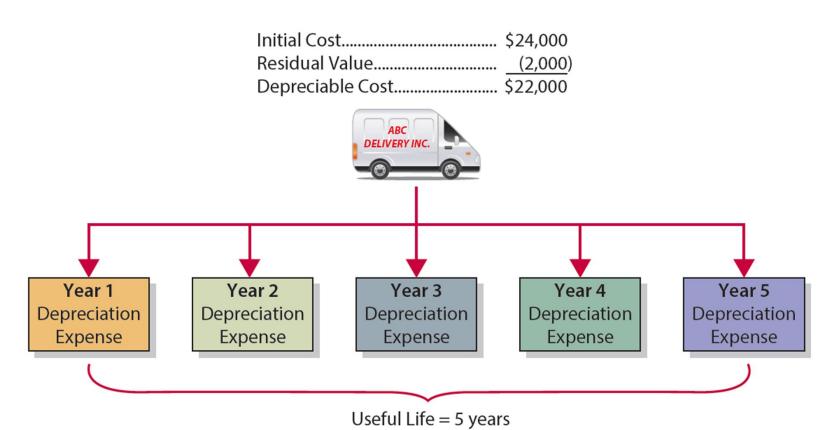
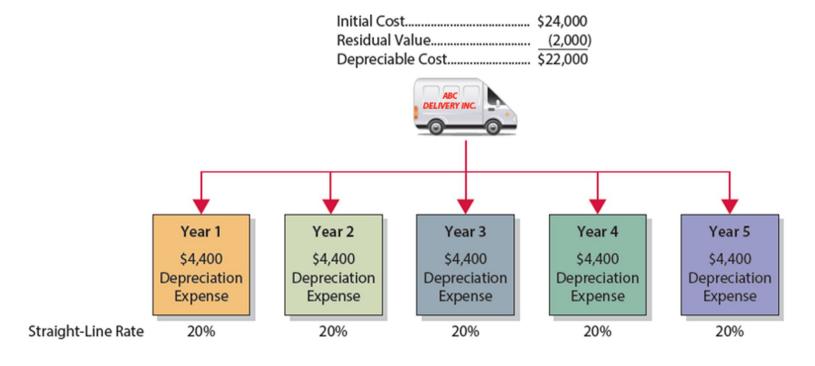




Exhibit 5: Straight-Line Method

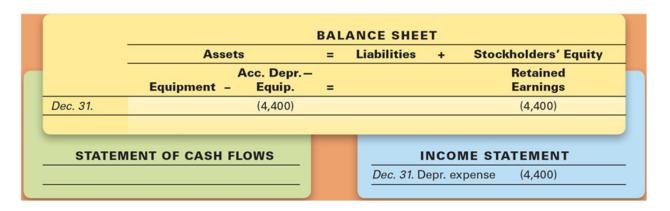


Annual Depreciation =
$$\frac{\text{Cost} - \text{Residual Value}}{\text{Useful Life}} = \frac{\$24,000 - \$2,000}{5 \text{ Years}} = \$4,400$$



Financial Statement Effects of Recording First-Year Depreciation

Financial statement effects



Transaction metric effects





Double-Declining-Balance Method

- Provides for a declining periodic expense over the expected useful life of the asset
- Also called accelerated depreciation method



Steps to Apply the Double-Declining-Balance Method

Step 1: Determine the straight-line percentage using the expected useful life

Step 2: Determine the double-declining-balance rate by multiplying the straight-line rate from step one by two



Step 3: Compute the depreciation expense by multiplying the double-decliningbalance rate from step two by the book value of the asset



Double-Declining-Balance Method: Illustration

 Assume a \$24,000 depreciable asset with an estimated five-year useful life and an estimated \$2,000 residual value

		Acc. Depr.	Book Value		Double-		Book Value
	_	at Beginning	at Beginning		Declining-	Depreciation	at End
Year	Cost	of Year	of Year		Balance Rate	for Year	of Year
1	\$24,000		\$24,000.00	×	40%	\$9,600.00	\$14,400.00
2	24,000	\$ 9,600.00	14,400.00	×	40%	5,760.00	8,640.00
3	24,000	15,360.00	8,640.00	×	40%	3,456.00	5,184.00
4	24,000	18,816.00	5,184.00	×	40%	2,073.60	3,110.40
5	24,000	20,889.60	3,110.40	×	_	1,110.40	2,000.00



Exhibit 6: Double-Declining-Balance Method

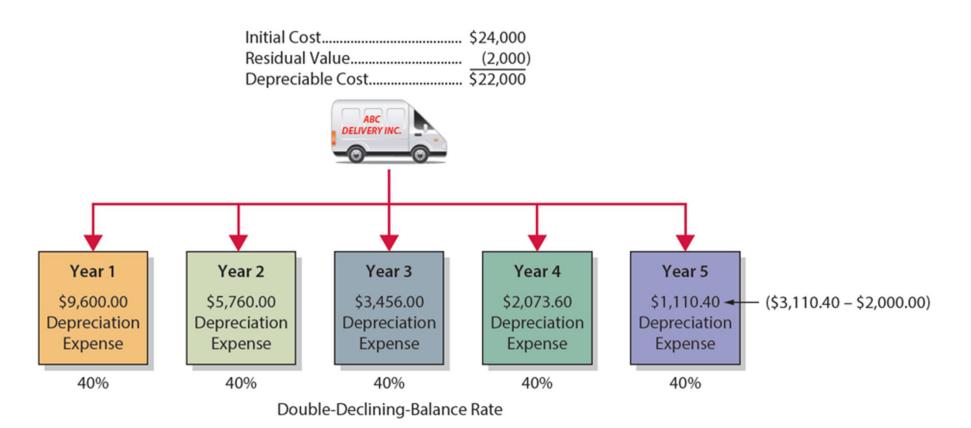




Exhibit 7: Summary of Depreciation Methods

Method	Useful Life	Depreciable Cost	Depreciation Rate	Depreciation Expense
Straight-line	Years	Cost less residual value	Straight-line rate*	Constant
Double- declining- balance	Years	Declining book value, but not below residual value	Straight-line rate* \times 2	Declining
*Straight-line ra	te = (1/Useful life)			



Exhibit 8: Comparing Depreciation Methods

	Dep	Depreciation Expense			
Year	Straight-Line Method	Double-Declining-Balance Method			
1	\$ 4,400.00*	\$ 9,600.00 (\$24,000 × 40%)			
2	4,400.00	5,760.00 (\$14,400 × 40%)			
3	4,400.00	3,456.00 (\$8,640 × 40%)			
4	4,400.00	2,073.60 (\$5,184 × 40%)			
5	4,400.00	1,110.40**			
Total	\$22,000.00	\$22,000.00			

^{**}\$3,110.40 - \$2,000.00 because the equipment cannot be depreciated below its residual value.



ansr10

Partial Year Depreciation

- Depreciation is prorated based on the month the asset is placed in service
- Computed using:
 - Straight-line method
 - Double-declining-balance method



ansr10 We have not made the suggested change on this slide since the sentence does not seem redundant. ansrsource, 11/19/2019

Partial Year Depreciation: Straight-Line Method

- Illustration: The van in the preceding illustration was purchased on October 1 instead of January 1
 - The first-year depreciation would be computed as follows:
 - Annual depreciation = (\$22,000 \$2,000) ÷ 5 years = \$4,400
 - First-year depreciation = $\$4,400 \times (3 \div 12) = \$1,100$
 - Second year's depreciation = \$4,400



Partial Year Depreciation: Double-Declining-Balance Method

- Illustration: The van in the preceding illustration was purchased on October 1 instead of January 1
 - Computation of depreciation for the first year
 - Double-declining balance rate = (100 ÷ 5) × 2 = 40%
 - First-year annual depreciation = \$24,000 × 40% = \$9,600
 - First-year partial depreciation = $$9,600 \times (3 \div 12) = $2,400$
 - Second-year annual depreciation = \$21,600 × 40% = \$8,640



Additional Costs

- Incurred after a fixed asset has been purchased and placed into service
- Include:
 - Routine maintenance and repairs
 - Known and recorded as revenue expenditures
 - Extraordinary repairs and improvements
 - Known and recorded as capital expenditures
 - Improvements
 - Recorded as capital expenditure



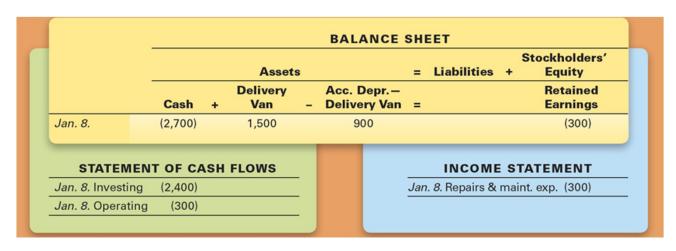
Maintenance, Repair, and Improvement Costs: Illustration

- On January 8 of Year 2, the van that was used incurred the following costs:
 - Tune-up engine and oil change: \$300
 - Repaired transmission: \$900
 - Installed new hydraulic lift: \$1,500



Effects of Incurring the Preceding Costs

Financial statement effects

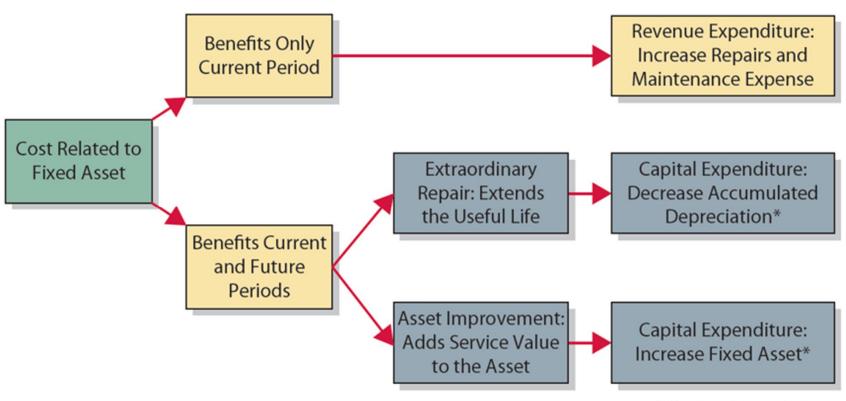


Transaction metric effects





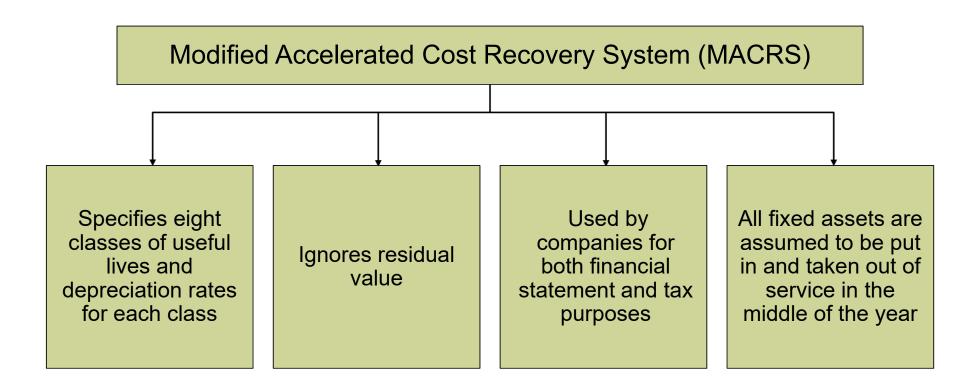
Exhibit 9: Revenue and Capital Expenditures



* Revise depreciation.



Depreciation for Federal Income Tax





Learning Objective 3

Describe the accounting for the disposal of fixed assets



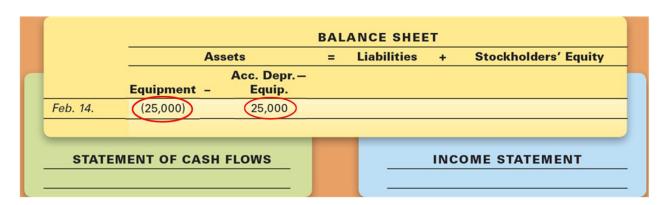
Disposal of Fixed Assets

- Fixed assets are removed from accounts when they are discarded or sold
- If a fixed asset is still being used, its cost and accumulated depreciation should remain in the records even if the asset is fully depreciated
 - Maintains accountability



Discarding Fixed Assets

 Fully depreciated equipment acquired at a cost of \$25,000 is discarded on February 14, 20Y7



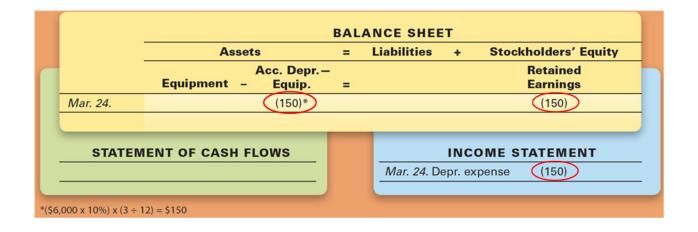
Transaction metric effects





Discarding Fixed Assets (continued 1)

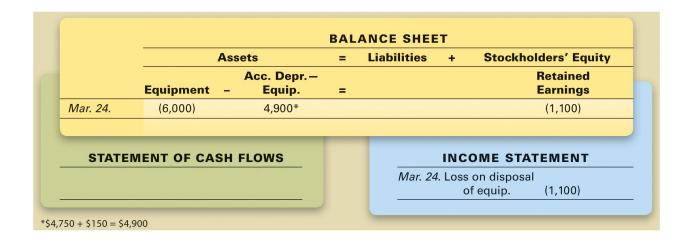
- Equipment costing \$6,000 with \$4,750 of accumulated depreciation on December 31, 20Y6, is discarded on March 24, 20Y7
 - Effect of recording the depreciation for the three months of 20Y7 before the asset is discarded





Discarding Fixed Assets (continued 2)

- Equipment costing \$6,000 with \$4,750 of accumulated depreciation on December 31, 20Y6, is discarded on March 24, 20Y7
 - Effect on the accounts and financial statements of discarding the equipment





Discarding Fixed Assets (continued 3)

- Equipment costing \$6,000 with \$4,750 of accumulated depreciation on December 31, 20Y6, is discarded on March 24, 20Y7
 - Effects of updating depreciation and discarding the asset on liquidity and profitability metrics are as follows:





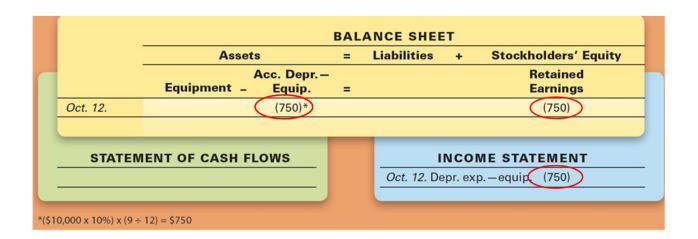
Selling Fixed Assets

- Entry to record the sale of fixed assets is similar to the entries for discarding fixed assets
 - Involves recording cash or other assets received
- Sale of fixed assets could result in a gain or a loss
- Illustration: Equipment costing \$10,000 with no estimated residual value is depreciated at an annual straight-line rate of 10%
 - The equipment is sold for cash at book value on October 12 of the eighth year of use
 - Accumulated depreciation as of the preceding December 31 is \$7,000



Selling Fixed Assets (continued)

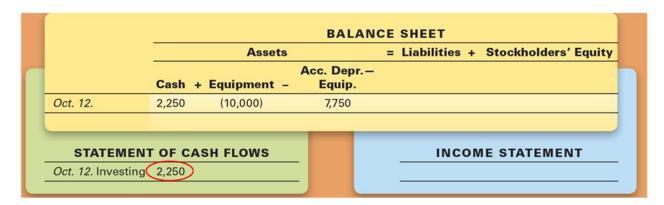
 Financial statement effects of updating depreciation for nine months of the current year





Selling Fixed Assets: Assumption (a)

The asset is sold at book value, for \$2,250

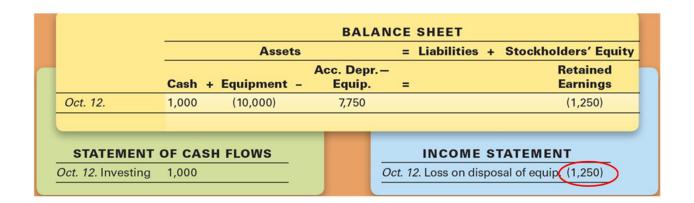


No gain or loss



Selling Fixed Assets: Assumption (b)

The asset is sold below book value, for \$1,000





Selling Fixed Assets: Assumption (c)

The asset is sold above book value, for \$2,800

		BALANCE SHEET			
	<u> </u>	Assets		= Liabilities + Stockholders' Equit	
	Cash +	Equipment -	Acc. Depr. Equip.	- =	Retained Earnings
Oct. 12.	2,800	(10,000)	7,750		550
STATEME	NT OF CAS	H FLOWS		IN	COME STATEMENT
Oct. 12. Investing 2,800			Oct. 12. Gain	on disposal of equip. 550	

\$2,800 - \$2,250

Gain of \$550



Selling Fixed Assets: Transaction Metric Effects

 Effects of updating depreciation and selling the equipment on liquidity and profitability metrics

	Liquidity Metric	Profitability Metric
	Free Cash Flow	<u>AssetTurnover</u>
Equipment sold for \$2,250. No gain or loss.	\$2,250	Increase
Equipment sold for \$1,000. Loss of \$1,250.	\$1,000	Increase
Equipment sold for \$2,800. Gain of \$550.	\$2,800	Increase



Learning Objective 4

Describe the accounting for depletion of natural resources



Natural Resources Assets

- Characteristics
 - Naturally occurring
 - Removed from their land source for sale
 - Removed and sold over more than one year
- Classified as a type of long-term asset
- Depletion expense account is created for a portion of the cost of the resource removed



Depletion

- Depletion is determined as follows:
 - Step 1

Depletion Rate =
$$\frac{\text{Cost of Resource}}{\text{Estimated Total Units of Resource}}$$

• Step 2

Depletion Expense = Depletion Rate \times Quantity Removed



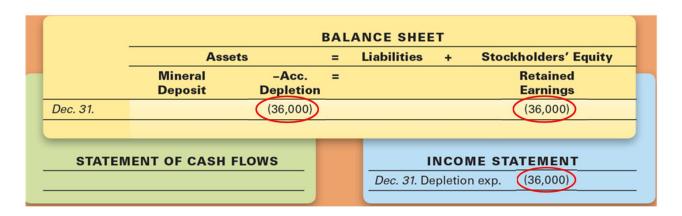
Depletion Expense: Illustration

- Karst Company purchased mining rights as follows:
 - Cost of mineral deposit: \$400,000
 - Estimated total units of resource: 1,000,000 tons
 - Tons mined during year: 90,000 tons
 - Depletion rate = $$400,000 \div 1,000,000 = 0.40 per ton
 - Depletion expense = \$0.40 per ton × 90,000 tons = \$36,000



Effect of Depletion on Accounts and Financial Statements

Financial statement effects



Transaction metric effects





Learning Objective 5

Describe the accounting for intangible assets



Intangible Assets

- Long-term assets that are used in the operations of a business
 - Acquired through innovative, creative activities or from purchasing the rights from another company
- Do not exist physically
- Accounting is similar to that for fixed assets
- Cost is transferred to expense through amortization



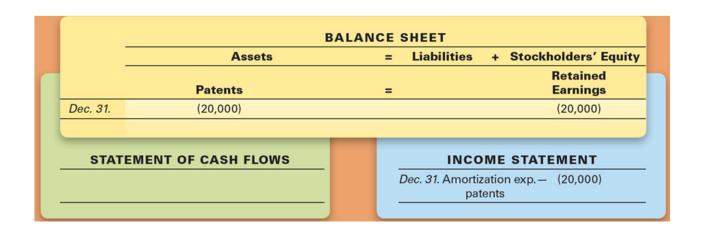
Patents

- Allow manufacturers to acquire exclusive rights to produce and sell goods with one or more unique features
- Patent amortization is computed using the straight-line method
- Costs of the patents developed through research and development are recorded as current operating expenses in the period in which they are incurred



Patents: Illustration

- At the beginning of its fiscal year, a company acquires patent rights for \$100,000
 - Although the patent will not expire for 14 years, its remaining useful life is estimated as five years





Patents: Transaction Metric Effects

 Effects of amortizing the patent on the liquidity and profitability metrics are as follows:





Copyrights and Trademarks

Copyright

- Exclusive right to publish and sell a literary, artistic, or musical composition
- Costs include all costs of creating the work plus any other costs of obtaining the copyright
- Amortized over its estimated useful life

Trademark

- Name, term, or symbol used to identify a business and its products
- Symbol: ®
- Not amortized



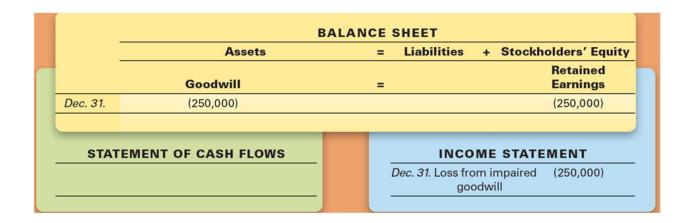
Goodwill

- Created from favorable factors, such as location, product quality, reputation, and managerial skill
- Generally accepted accounting principles (GAAP)
 - Allow goodwill to be recorded only if it is objectively determined by a transaction
- Not amortized



Goodwill: Illustration

 On December 31, FaceCard Company has determined that \$250,000 of the goodwill created from the purchase of Electronic Systems is impaired





Goodwill: Transaction Metric Effects

 The effects the impaired goodwill has on liquidity and profitability metrics are as follows:





Exhibit 11: Comparison of Intangible Assets

Intangible Asset	Description	Amortization Period	Periodic Expense
Patent	Exclusive right to benefit from an innovation	Estimated useful life not to exceed legal life	Amortization expense
Copyright	Exclusive right to benefit from a literary, artistic, or musical composition	Estimated useful life not to exceed legal life	Amortization expense
Trademark	Exclusive use of a name, term, or symbol	None	Impairment loss if fair value less than carrying value (impaired)
Goodwill	Excess of purchase price of a business over the fair value of its net assets (assets – liabilities)	None	Impairment loss if fair value less than carrying value (impaired)



Learning Objective 6

Describe the reporting of fixed assets, natural resources, and intangible assets on the income statement and balance sheet



Financial Reporting for Fixed Assets and Intangible Assets

Income statement

- Depreciation and amortization should be reported separately
- Description of methods used in computation should be disclosed

Balance sheet

- Each class of fixed assets should be disclosed
- Related accumulated depreciation should be disclosed
- Intangible assets are reported in a separate section



Exhibit 12: Fixed Assets and Intangible Assets on the Balance Sheet

		Assets			
Total current assets					\$ 462,500
Property, plant, and equipment:	Cost	Acc. Depr.	Book Value		
Land	\$ 30,000		\$ 30,000		
Buildings	110,000	\$ 26,000	84,000		
Factory equipment	650,000	192,000	458,000		
Office equipment	120,000	13,000	107,000		
	\$ 910,000	\$ 231,000		\$ 679,000	
Mineral deposits:	Cost	Acc. Depl.	Book Value		
Alaska deposit	\$1,200,000	\$ 800,000	\$ 400,000		
Wyoming deposit	750,000	200,000	550,000		
	\$1,950,000	\$ 1,000,000		950,000	
Total property, plant, and equipment					1,629,000
Intangible assets:					
Patents				\$ 75,000	
Goodwill				50,000	
Total intangible assets					125,000



Learning Objective 7

Describe and illustrate asset turnover in assessing a company's operating results



Asset Turnover: Illustration

 The following data (in millions) are adapted from recent financial statements for Delta Air Lines:

	Year 2	Year 1
Sales	\$41,244	\$39,639
Operating assets (average for year):		
Property, plant, equipment	25,469	23,707
Intangibles	14,640	14,647

Asset turnover (rounded to two decimal places)

Asset turnover	Year 2	Year 1
\$41,244 ÷ (\$25,469 + \$14,640)	1.03	NA
\$39,639 ÷ (\$23,707 + \$14,647)	NA	1.03



End of Chapter 7

