

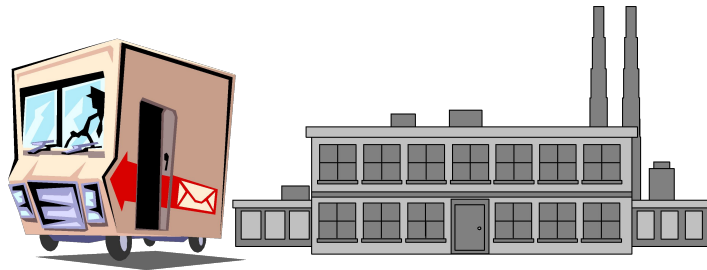
# Plant and Intangible Assets

## Chapter 9



# Plant Assets as a “Stream of Future Services”

Plant assets represent a bundle of future services, and can be thought of as long-term prepaid expenses.

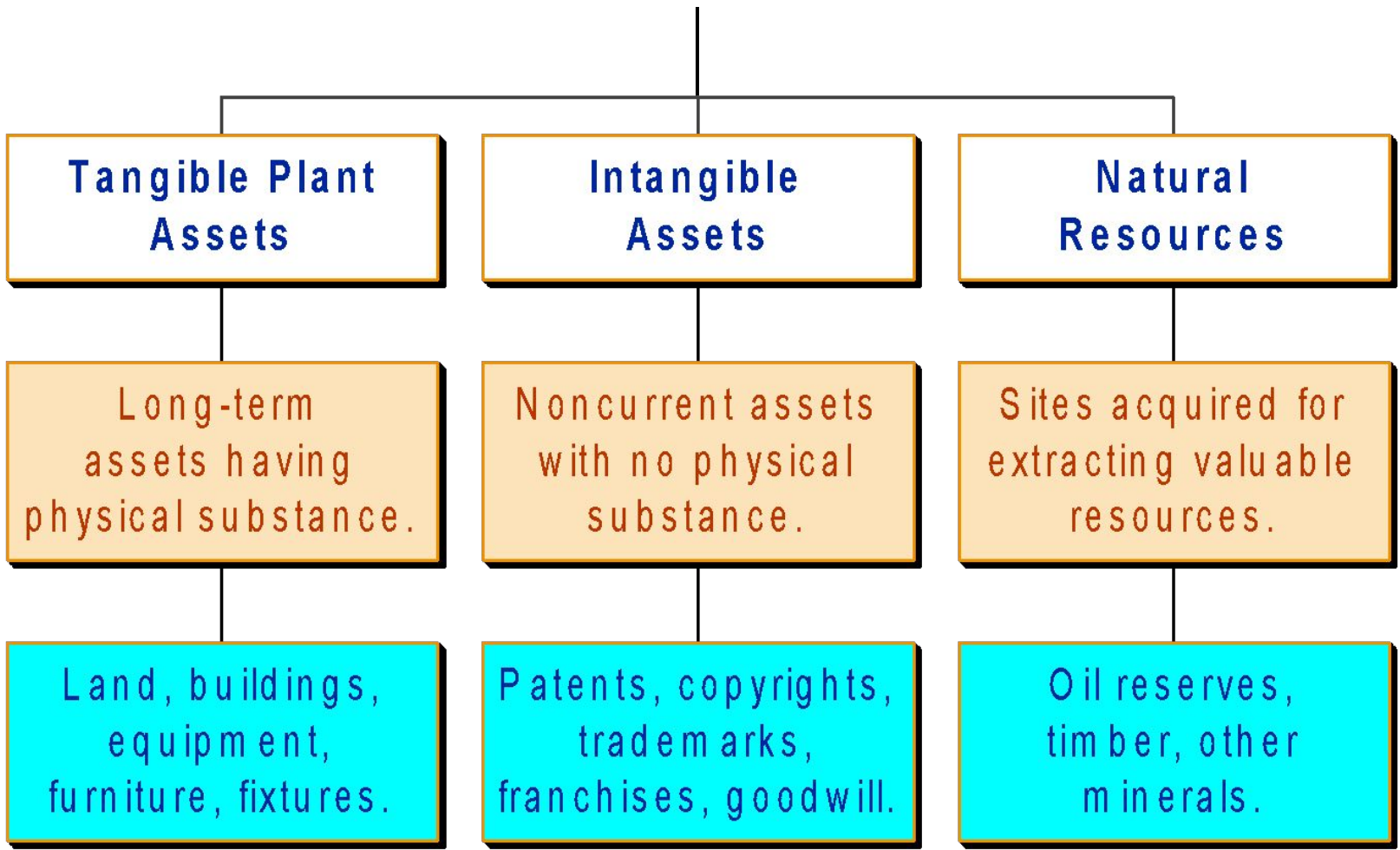


The cost of plant assets is the *advance purchase* of services.

Date	Description	Debit	Credit

As years pass, and the services are used, the cost is transferred to *depreciation expense*.

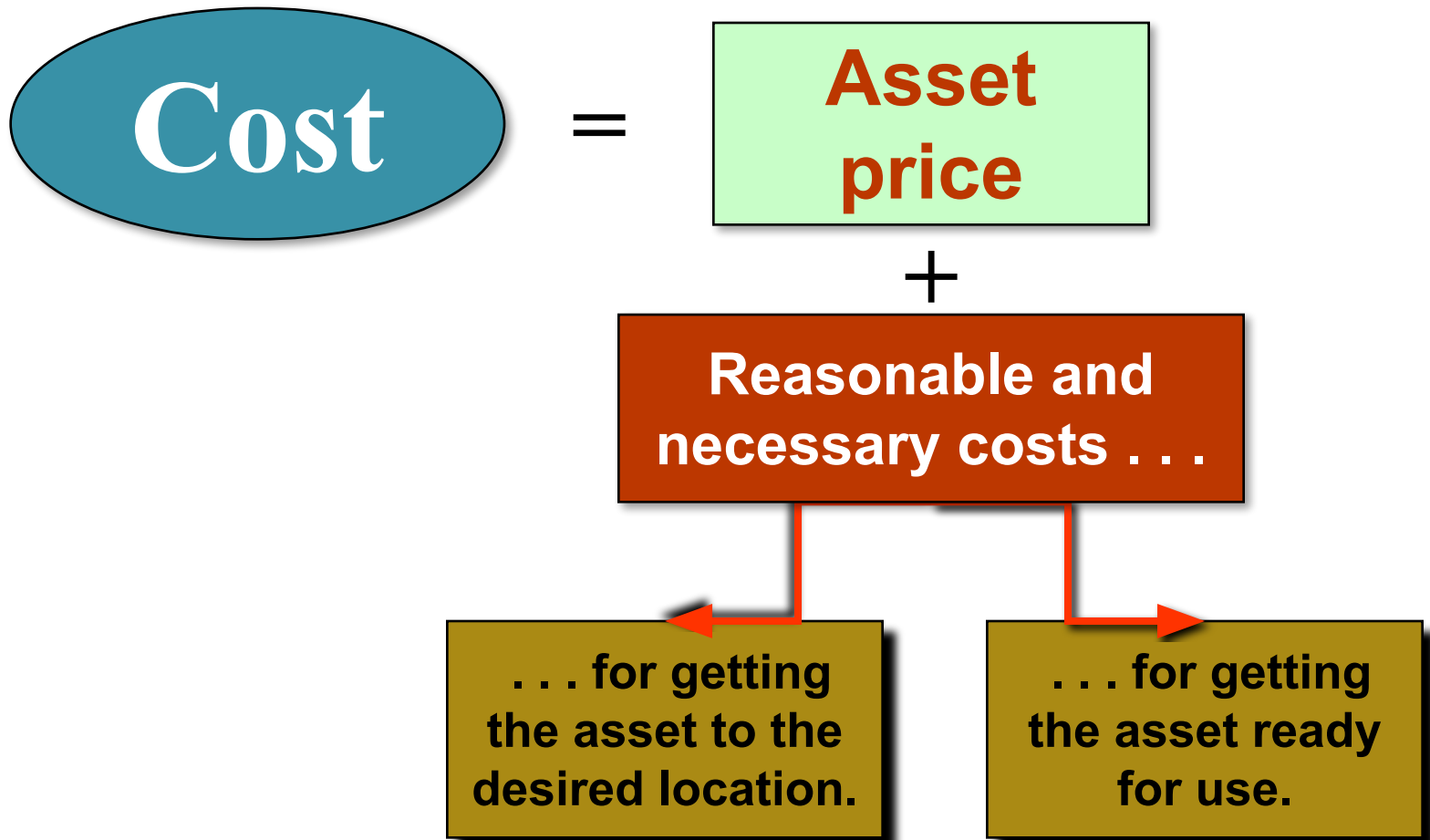
# Major Categories of Plant Assets



# Accountable Events in the Lives of Plant Assets

- Acquisition.
- Allocation of the acquisition cost to expense over the asset's useful life (depreciation).
- Sale or disposal.

# Acquisition of Plant Assets



# Special Considerations

Land



**Cost includes real estate commissions, escrow fees, legal fees, clearing and grading the property.**

Land Improvements

**Improvements to land such as driveways, fences, and landscaping are recorded separately.**

# Special Considerations

**Buildings**



Repairs made prior to the building being put in use are considered part of the building's cost.

**Equipment**

Related interest, insurance, and property taxes are treated as expenses of the current period.

# Special Considerations

## Allocation of a Lump-Sum Purchase



The total cost must be allocated to separate accounts for each asset.

The allocation is based on the relative **Fair Market Value** of each asset purchased.



# Capital Expenditures and Revenue Expenditures

Capital Expenditure

Any material expenditure that will benefit several accounting periods.

To **capitalize** an expenditure means to charge it to an **asset account**.

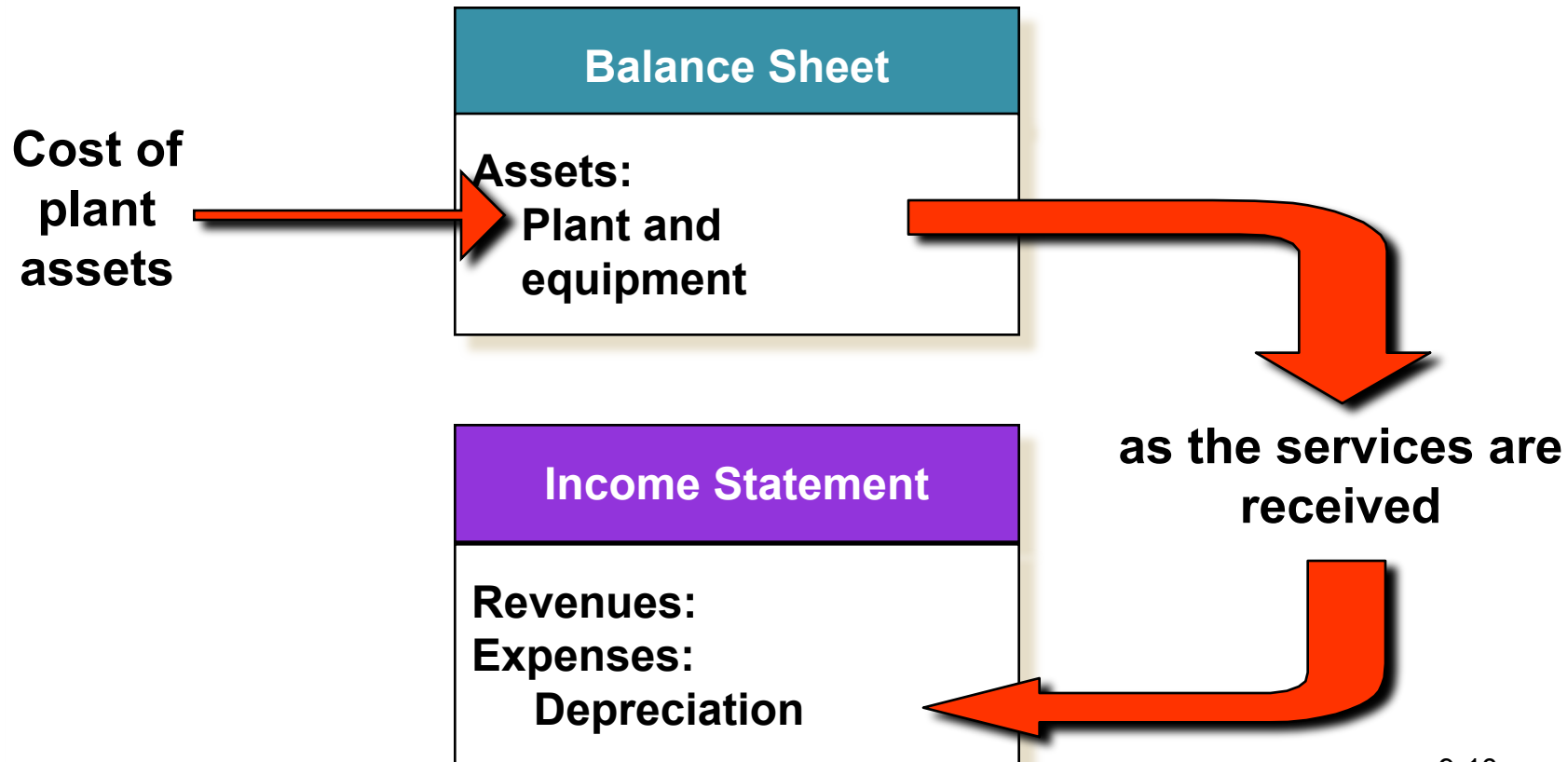
Revenue Expenditure

Expenditure for ordinary repairs and maintenance.

To **expense** an expenditure means to charge it to an **expense account**.

# Depreciation

The allocation of the cost of a plant asset to expense in the periods in which services are received from the asset.



# Depreciation

## Book Value

Cost – Accumulated Depreciation

## Depreciation

- Contra-asset
- Represents the portion of an asset's cost that has already been allocated to expense.

## Causes of Depreciation

- Physical deterioration
- Obsolescence



# Straight-Line Depreciation

$$\text{Depreciation Expense per Year} = \frac{\text{Cost} - \text{Residual Value}}{\text{Years of Useful Life}}$$



# Straight-Line Depreciation

On January 2, S&G Wholesale Grocery buys a new delivery truck. The truck cost \$24,000, has an estimated residual value of \$3,000, and an estimated useful life of 5 years.

Compute annual depreciation using the straight-line method.

$$\frac{\text{Cost} - \text{Residual Value}}{\text{Years of Useful Life}} = \frac{\$ 24,000 - \$ 3,000}{5}$$
$$= \$ 4,200 \text{ per year}$$

# Straight-Line Depreciation

S&G will record \$4,200 depreciation each year for five years. Total depreciation over the estimated useful life of the equipment is:

Year	Depreciation Expense (debit)	Accumulated Depreciation (credit)	Accumulated Depreciation Balance	Undepreciated Balance (book value)
				\$ 24,000
First	\$ 4,200	\$ 4,200	\$ 4,200	19,800
Second	4,200	4,200	8,400	15,600
Third	4,200	4,200	12,600	11,400
Fourth	4,200	4,200	16,800	7,200
Fifth	4,200	4,200	21,000	3,000
	<u>\$ 21,000</u>	<u>\$ 21,000</u>		

Salvage Value



# Depreciation for Fractional Periods

When an asset is acquired during the year, depreciation in the year of acquisition must be prorated.

## Half-Year Convention

**In the year of acquisition, record six months of depreciation.**

**1/2**

# Half-Year Convention

Using the half-year convention, calculate the straight-line depreciation on December 31, 2009, for equipment purchased in 2009. The equipment cost \$75,000, has a useful life of 10 years and an estimated residual value of \$5,000.

$$\begin{aligned}\text{Depreciation} &= (\$75,000 - \$5,000) \div 10 \\ &= \$7,000 \text{ for a full year}\end{aligned}$$

$$\text{Depreciation} = \$7,000 \times \frac{1}{2} = \$3,500$$



# Declining-Balance Method

Depreciation in the early years of an asset's estimated useful life is higher than in later years.

$$\text{Depreciation Expense} = \text{Remaining Book Value} \times \text{Accelerated Depreciation Rate}$$

The double-declining balance depreciation rate is 200% of the straight-line depreciation rate of  $(1 \div \text{Useful Life})$ .

# Declining-Balance Method

On January 2, S&G buys a new delivery truck paying \$24,000 cash. The truck has an estimated residual value of \$3,000 and an estimated useful life of 5 years.

Compute depreciation for the first year using the double-declining balance method.

$$\begin{aligned} \text{First Year Expense} &= \text{Remaining Book Value} \times \text{Accelerated Depreciation Rate} \\ &= \$ 24,000 \times 2 \times \frac{1}{5} \\ &= \$ 24,000 \times 40\% \\ &= \$ 9,600 \end{aligned}$$

# Declining-Balance Method

Total depreciation over the estimated useful life of an asset is the same using either the **straight-line method** or the **declining-balance method**.

Year	Computation	Depr. Expense	Accumulated Depreciation	Book Value
First	\$ 24,000 × 40%	\$ 9,600	\$ 9,600	\$ 14,400
Second	14,400 × 40%	5,760	15,360	8,640
Third	8,640 × 40%	3,456	18,816	5,184
Fourth	5,184 × 40%	2,074	20,890	3,110
Fifth	<b>Plug year # 5</b>	110	21,000	3,000
Total Depreciation		<u>\$ 21,000</u>		

# Financial Statement Disclosures

## Estimates of Useful Life and Residual Value

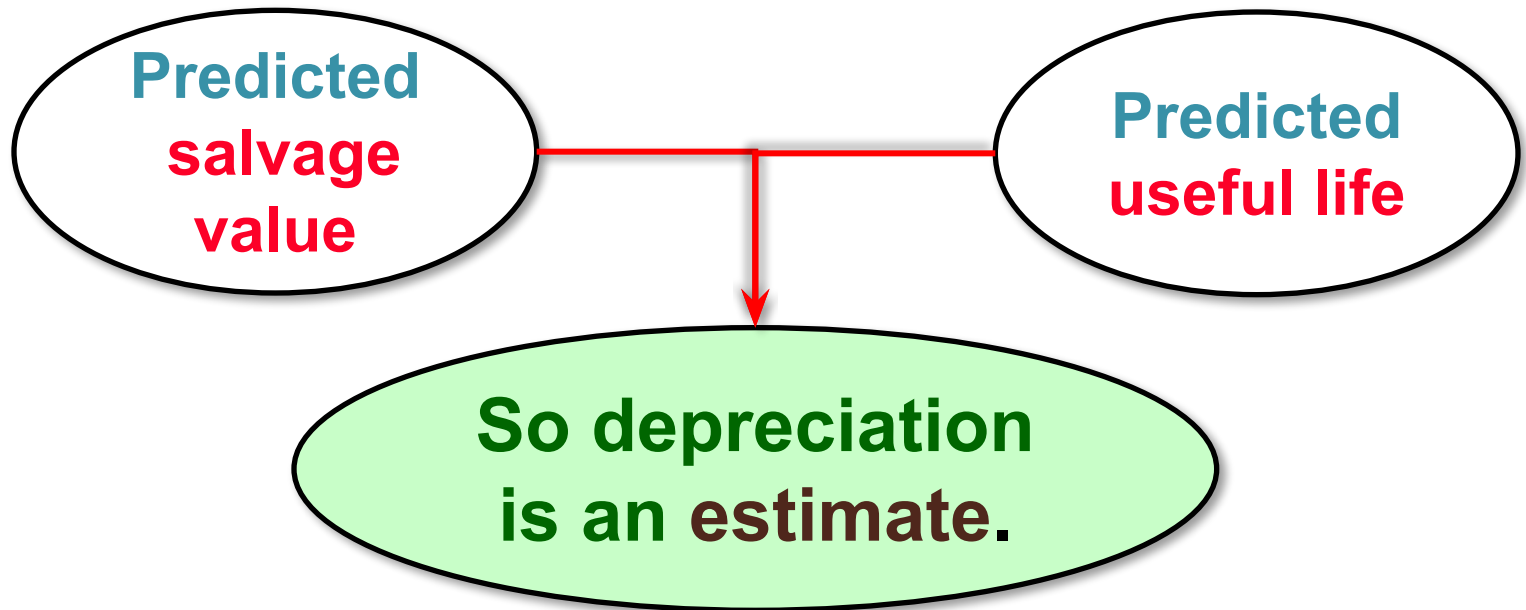
- **May differ from company to company.**
- **The reasonableness of management's estimates is evaluated by external auditors.**



## Principle of Consistency

- **Companies should avoid switching depreciation methods from period to period.**

# Revising Depreciation Rates



**Over the life of an asset, new information may come to light that indicates the original estimates need to be revised.**

# Revising Depreciation Rates

On January 1, 2006, equipment was purchased that cost \$30,000, has a useful life of 10 years and no salvage value. During 2009, the useful life was revised to 8 years total (5 years remaining).

Calculate depreciation expense for the year ended December 31, 2009, using the straight-line method.

# Revising Depreciation Rates

When our estimates change,  
depreciation is:



**Book value at  
date of change**

—

**Salvage value at  
date of change**

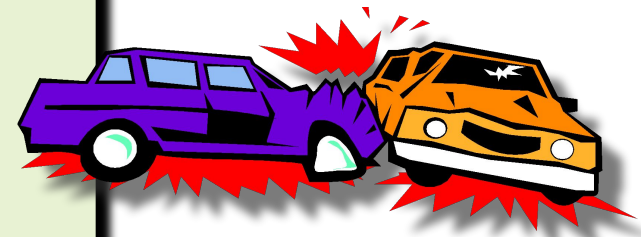
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**Remaining useful life at date of change**

<b>Asset cost</b>	<b>\$ 30,000</b>
<b>Accumulated depreciation, 12/31/2008</b> <b>(\$3,000 per year × 3 years)</b>	<b>9,000</b>
<b>Remaining book value</b>	<b>\$ 21,000</b>
<b>Divide by remaining life</b>	<b>÷ 5</b>
<b>Revised annual depreciation</b>	<b>\$ 4,200</b>

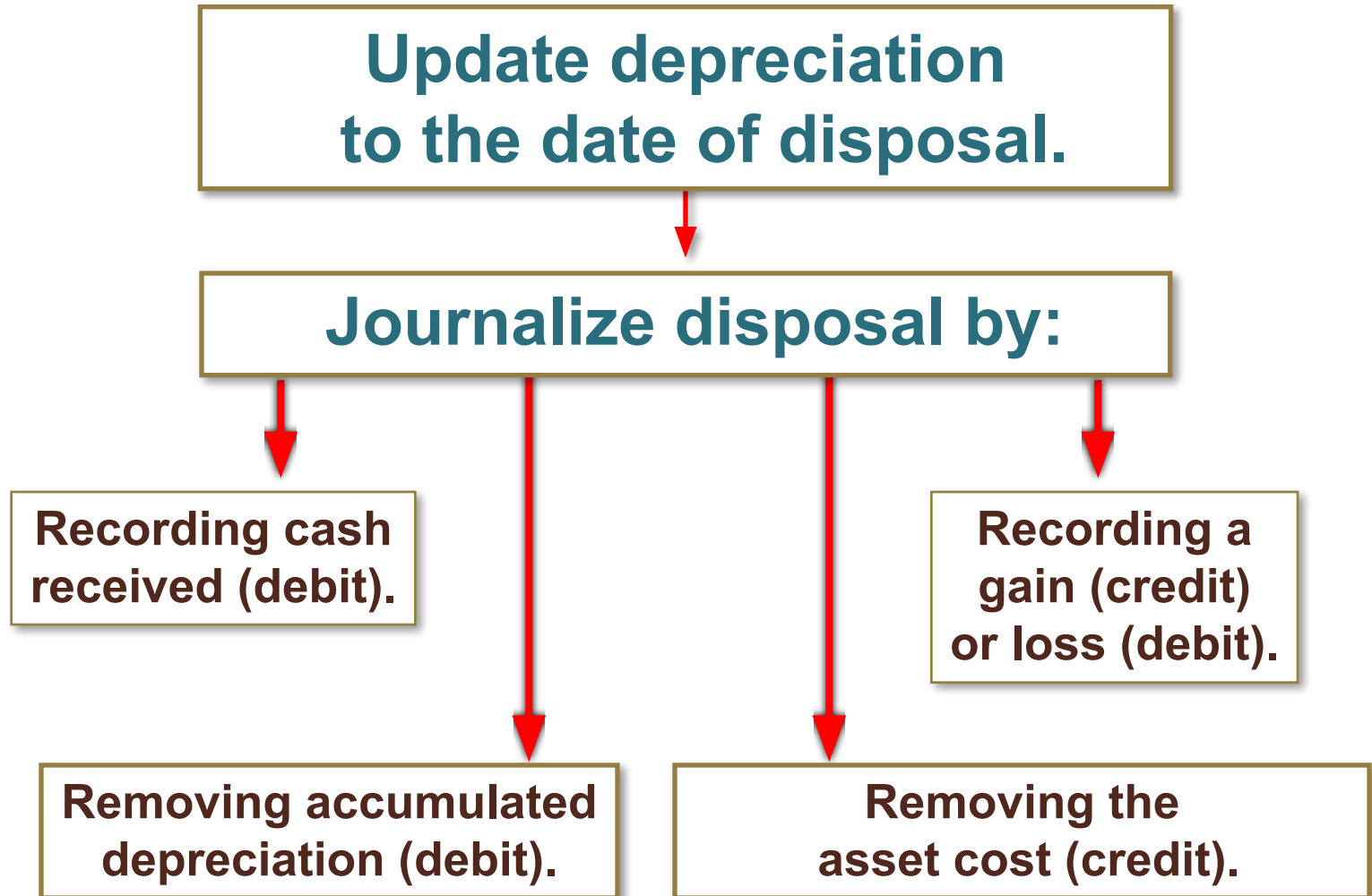
# Impairment of Plant Assets

If the cost of an asset cannot be recovered through future use or sale, the asset should be **written down** to its net realizable value.





# Disposal of Plant and Equipment



# Disposal of Plant and Equipment

**If Cash > BV, record a gain (credit).  
If Cash < BV, record a loss (debit).  
If Cash = BV, no gain or loss.**

**Recording cash  
received (debit).**

**Recording a  
gain (credit)  
or loss (debit).**



**Removing accumulated  
depreciation (debit).**

**Removing the  
asset cost (credit).**

# Disposal of Plant and Equipment

**Assume that a machine costing \$10,000, had accumulated depreciation of \$8,000 and book value of \$2,000 ( $10,000 - \$8,000$ ) at the time it was sold for \$3,000 cash. Determine the gain or loss on sale of this machine.**

Cost of machine	\$ 10,000
Accumulated depreciation	(8,000)
Book value at time of sale	2,000
Cash received	3,000
Gain on sale of machine	\$ 1,000

# Disposal of Plant and Equipment

**Assume that a machine costing \$10,000, had accumulated depreciation of \$8,000 and book value of \$2,000 ( $10,000 - \$8,000$ ) at the time it was sold for \$3,000 cash. Determine the gain or loss on sale of this machine.**

Description	Debit	Credit
Cash	3,000	
Accumulated Depreciation: Machinery	8,000	
Gain on Disposal of Plant Asset		1,000
Machinery		10,000

# Trading in Used Assets for New Ones

Assume that Essex Company exchanges a used earthmover and \$35,000 cash for a new earthmoving machine. The old machine originally cost \$40,000, had up-to-date accumulated depreciation of \$30,000, and a fair value of \$4,000.

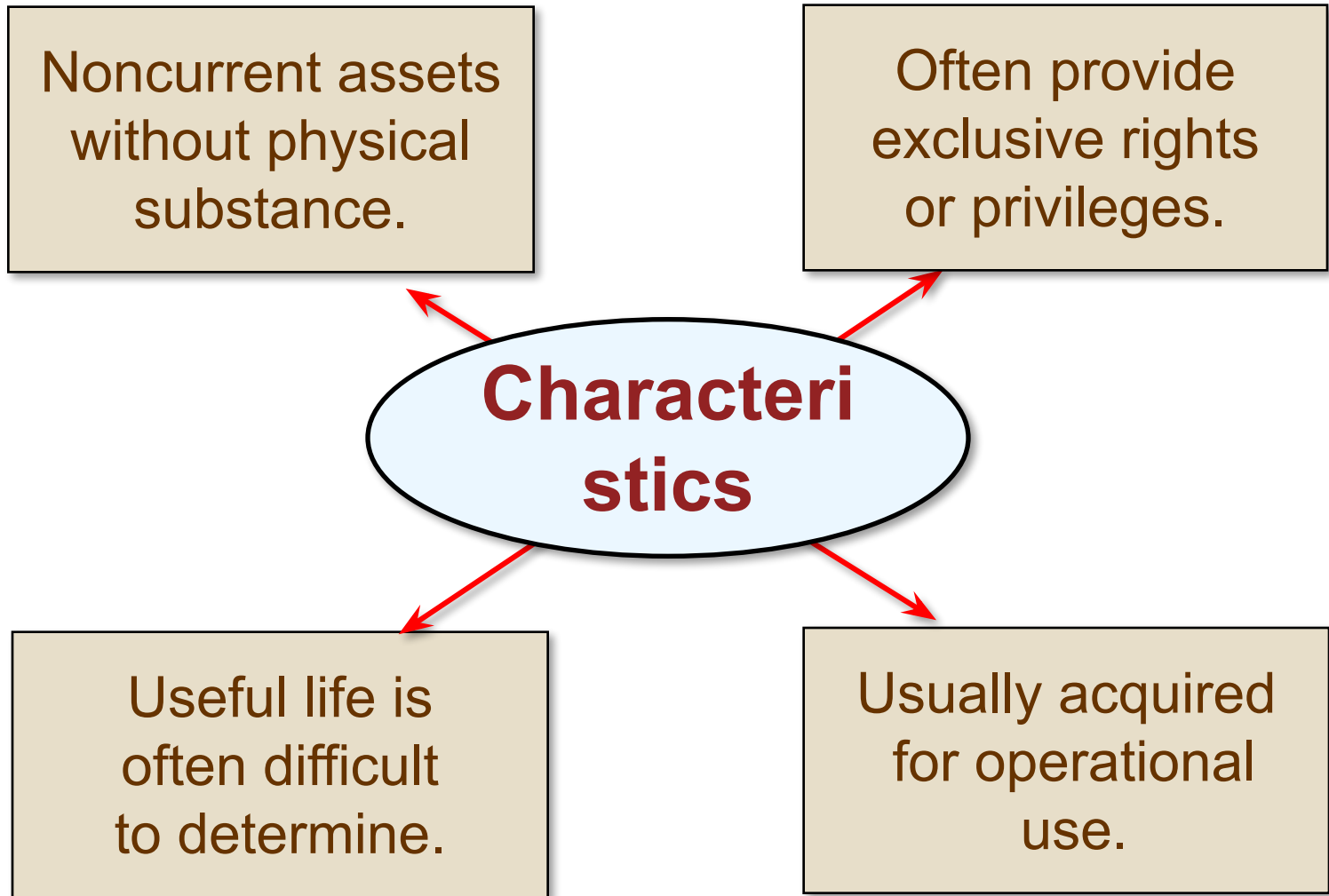


# Trading in Used Assets for New Ones

Cost of equipment	\$ 40,000
Accumulated depreciation: Equipment	30,000
Book value of equipment	\$ 10,000
Fair market value of equipment	4,000
Loss on disposal of plant asset	<u><u>\$ 6,000</u></u>

Description	Debit	Credit
Equipment (New earthmover)	39,000	
Accumulated depreciation: Equipment	30,000	
Loss on Disposal of Asset	6,000	
Equipment (Old earthmover)		40,000
Cash		35,000

# Intangible Assets



# Intangible Assets

**Record at current cash equivalent cost, including purchase price, legal fees, and filing fees.**



- **Patents**
- **Copyrights**
- **Leaseholds**
- **Leasehold Improvements**
- **Goodwill**
- **Trademarks and Trade Names**



# Amortization

- Amortization is the systematic write-off to expense of the cost of intangible assets over their useful life or legal life, whichever is shorter.
- Use the straight-line method to amortize most intangible assets.

Date	Description	Debit	Credit
	Amortization Expense	\$\$\$\$\$	
	Intangible Asset		\$\$\$\$\$

# Goodwill

Occurs when one company buys another company.

Only purchased goodwill is an intangible asset.

The amount by which the purchase price exceeds the fair market value of net assets acquired.

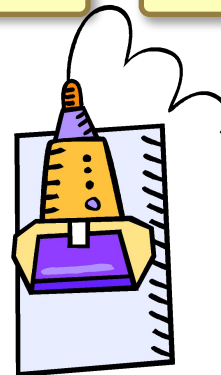
Goodwill is **NOT** amortized. It is tested annually to determine if there has been an **impairment** loss.

# Patents

**Exclusive right granted by federal government to sell or manufacture an invention.**

**Cost is purchase price plus legal cost to defend.**

**Amortize cost over the shorter of useful life or 20 years.**



# Trademarks and Trade Names

**A symbol, design, or logo associated with a business.**

**Internally developed trademarks have no recorded asset cost.**



**Purchased trademarks are recorded at cost, and amortized over shorter of legal or economic life.**

# Franchises

**Legally protected right to sell products or provide services purchased by franchisee from franchisor.**



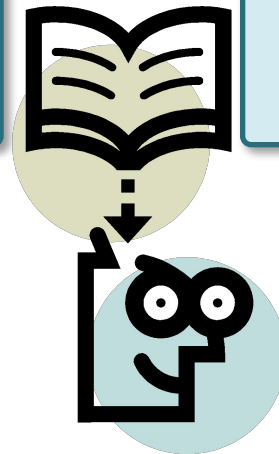
**Purchase price is intangible asset which is amortized over the shorter of the protected right or useful life.**

# Copyrights

**Exclusive right granted by the federal government to protect artistic or intellectual properties.**

**Legal life is life of creator plus 70 years.**

**Amortize cost over period benefited.**



# Research and Development Costs

**All expenditures classified as research and development should be charged to expense when incurred.**

All of these R&D costs will really reduce our net income this year!



# Natural Resources

**Total cost, including exploration and development, is charged to depletion expense over periods benefited.**



**Extracted from the natural environment and reported at cost less accumulated depletion.**

**Examples: oil, coal, gold**



# Depletion of Natural Resources

Depletion is calculated using the units-of-production method.

**Unit depletion rate is calculated as follows:**

$$\frac{\text{Cost} - \text{Residual Value}}{\text{Total Units of Natural Resource}}$$



# Plant Transactions and the Statement of Cash Flows

Cash payments for plant assets represent a cash outflow for investing activities on the statement of cash flows. A disposal of a plant asset for cash results in a cash inflow to the company.

Depreciation is a non-cash charge to income and has no effect on cash flows.



# End of Chapter 9

