

Chapter 10

PLANT ASSETS, NATURAL RESOURCES, AND INTANGIBLES

PowerPoint Authors:

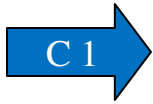
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PLANT ASSETS

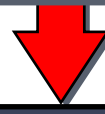
Tangible in Nature



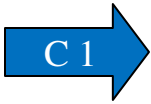
Actively Used in Operations



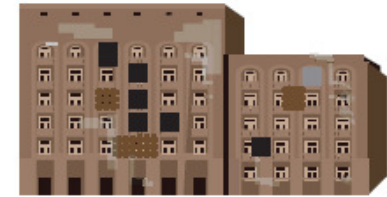
Expected to Benefit Future Periods



Called Property, Plant, & Equipment



PLANT ASSETS



Decline in asset value over its useful life

Acquisition

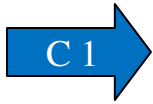
1. Compute cost

Use

2. Allocate cost to periods benefited
3. Account for subsequent expenditures

Disposal

4. Record disposal



COST DETERMINATION

Purchase price

Acquisition Cost

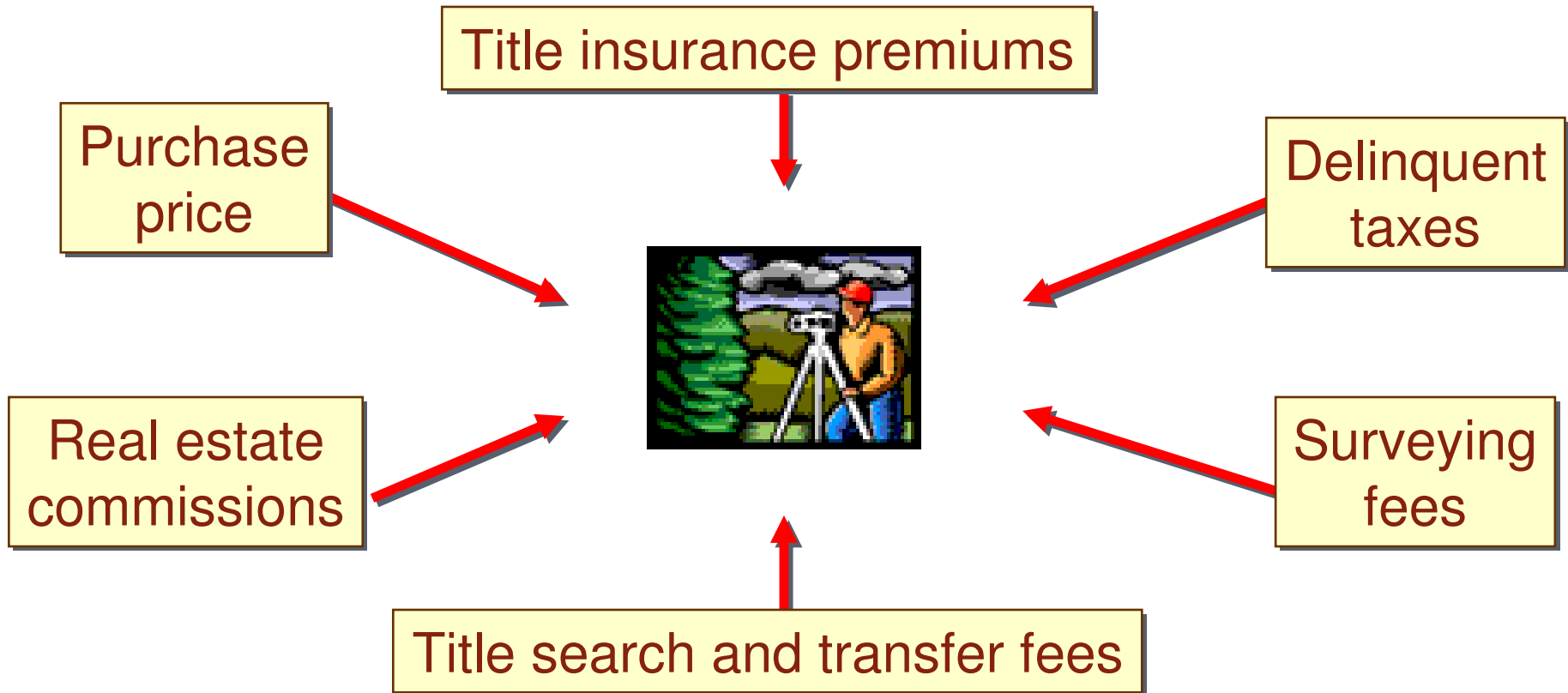
All expenditures needed to prepare the asset for its intended use

Acquisition cost *excludes* financing charges and cash discounts

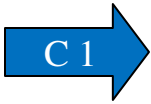


C1

LAND



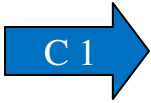
Land is **not** depreciable.



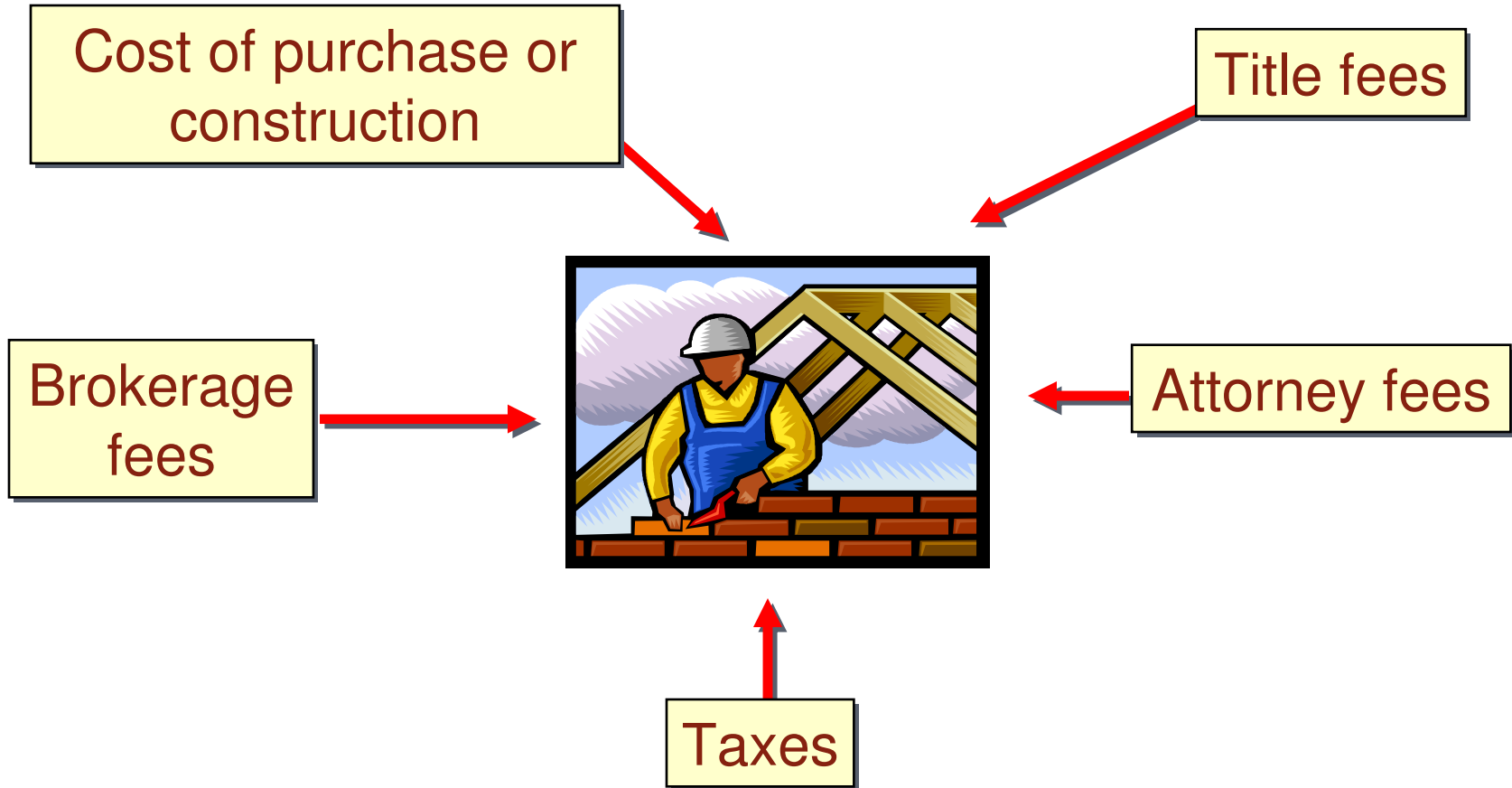
LAND IMPROVEMENTS

Parking lots, driveways, fences, walks, shrubs, and lighting systems.

Depreciate
over useful life of
improvements.

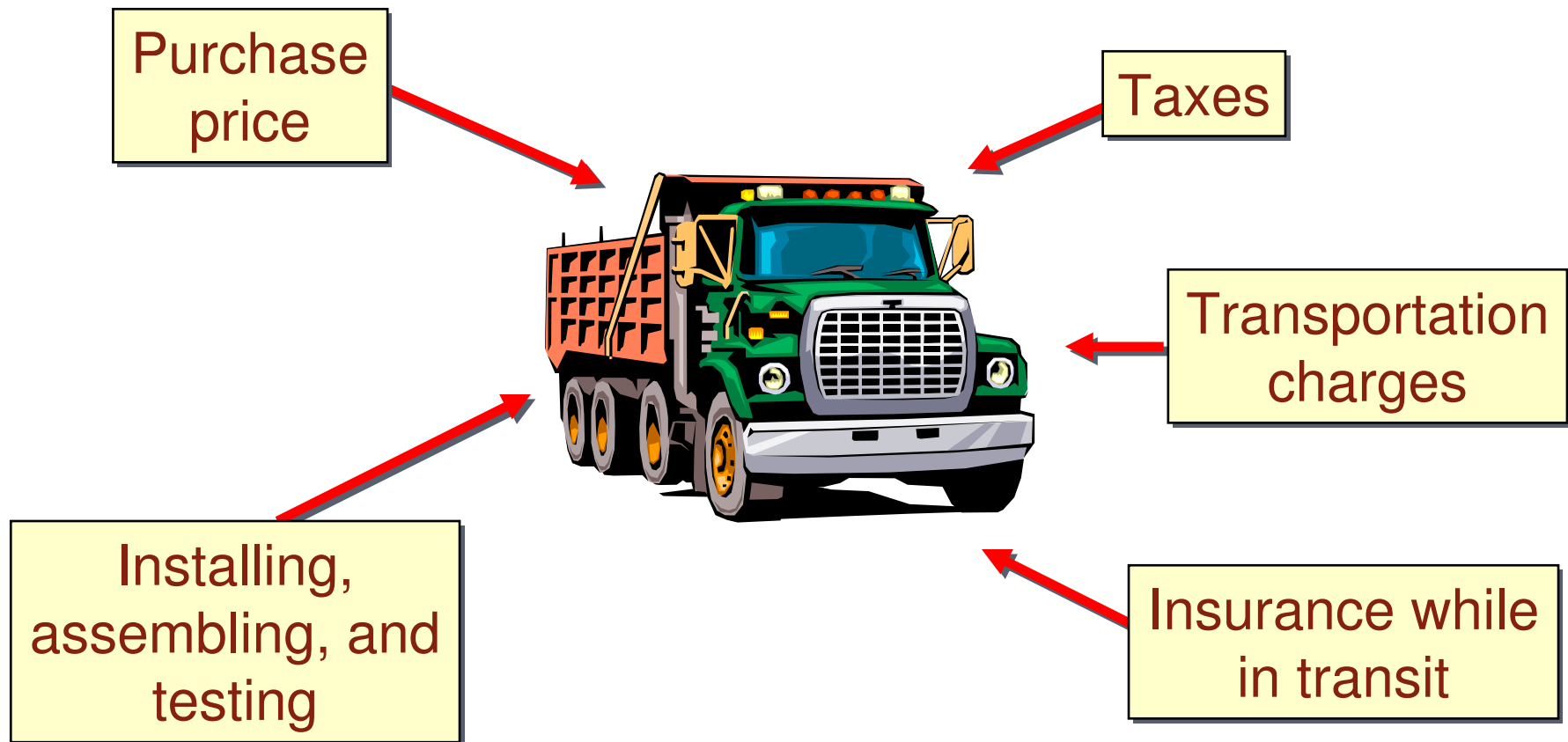


BUILDINGS



C1

MACHINERY AND EQUIPMENT



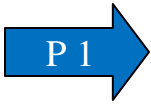
P 1

LUMP-SUM ASSET PURCHASE

The total cost of a combined purchase of land and building is separated on the basis of their **relative fair market values**.

CarMax paid \$90,000 cash to acquire a group of items consisting of land appraised at \$30,000, land improvements appraised at \$10,000, and a building appraised at \$60,000. The \$90,000 cost will be allocated on the basis of appraised values as shown:

	Appraised Value	Percent of Total	Apportioned Cost
Land	\$ 30,000	30% (\$30,000/\$100,000)	\$27,000 (\$90,000 × 30%)
Land improvements	10,000	10 (\$10,000/\$100,000)	9,000 (\$90,000 × 10%)
Building	60,000	60 (\$60,000/\$100,000)	54,000 (\$90,000 × 60%)
Totals	<u>\$100,000</u>	<u>100%</u>	<u>\$ 90,000</u>



DEPRECIATION

Depreciation is the process of allocating the cost of a plant asset to expense in the accounting periods benefiting from its use.

Balance Sheet

Acquisition
Cost

(Unused)

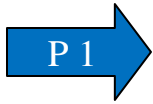
Cost

Allocation

Income Statement

Expense

(Used)

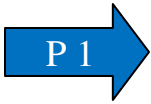


FACTORS IN COMPUTING DEPRECIATION

The calculation of depreciation requires three amounts for each asset:

- 1. Cost**
- 2. Salvage Value**
- 3. Useful Life**





DEPRECIATION METHODS

1. Straight-line
2. Units-of-production
3. Declining-balance

Asset we will depreciate in future screens

Cost	\$10,000
Salvage value	<u>1,000</u>
Depreciable cost	\$ 9,000
Useful life	
Accounting periods	5 years
Units inspected	36,000 shoes

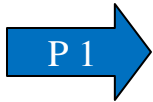

 P 1

STRAIGHT-LINE METHOD

Cost	\$10,000
Salvage value	<u>1,000</u>
Depreciable cost	\$ 9,000
Useful life	
Accounting periods	5 years
Units inspected	36,000 shoes

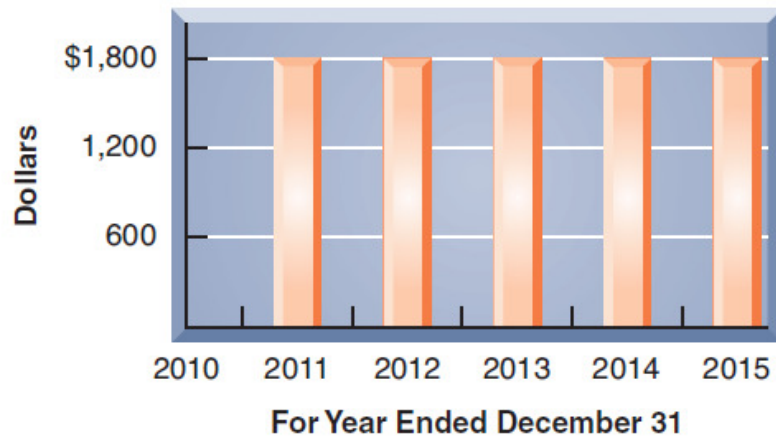
$$\frac{\text{Cost} - \text{Salvage value}}{\text{Useful life in periods}} = \frac{\$10,000 - \$1,000}{5 \text{ years}} = \$1,800 \text{ per year}$$

Dec. 31	Depreciation Expense	1,800	
	Accumulated Depreciation—Machinery		1,800
	<i>To record annual depreciation.</i>		

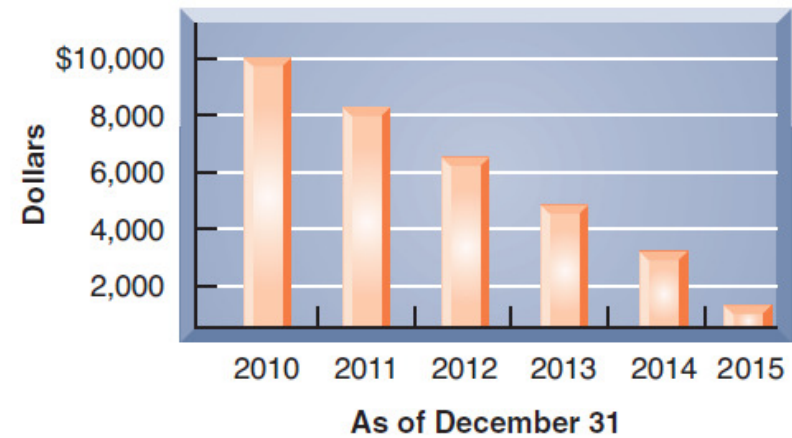


STRAIGHT-LINE METHOD

Depreciation Expense
(on Income Statement)

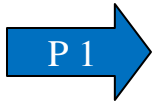


Asset Book Value
(on Balance Sheet)



Balance Sheet Presentation

Machinery	\$ 10,000	
Less: accumulated depreciation	<u>3,600</u>	\$ 6,400

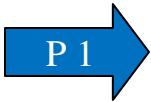


STRAIGHT-LINE DEPRECIATION SCHEDULE

Annual Period	Depreciation for the Period			End of Period	
	Depreciable Cost*	Depreciation Rate	Depreciation Expense	Accumulated Depreciation	Book Value†
2010	—	—	—	—	\$10,000
2011	\$9,000	20%	\$1,800	\$1,800	8,200
2012	9,000	20	1,800	3,600	6,400
2013	9,000	20	1,800	5,400	4,600
2014	9,000	20	1,800	7,200	2,800
2015	9,000	20	1,800	9,000	1,000

* \$10,000 – \$1,000.

† Book value is total cost minus accumulated depreciation.



UNITS-OF-PRODUCTION METHOD

Step 1:

$$\text{Depreciation Per Unit} = \frac{\text{Cost} - \text{Salvage Value}}{\text{Total Units of Production}}$$

Step 2:

$$\text{Depreciation Expense} = \text{Depreciation Per Unit} \times \text{Number of Units Produced in the Period}$$

P 1

UNITS-OF-PRODUCTION METHOD

Cost	\$10,000
Salvage value	<u>1,000</u>
Depreciable cost	\$ 9,000
Useful life	
Accounting periods	5 years
Units inspected	36,000 shoes

Assume that 7,000 units were inspected during 2011. Depreciation would be calculated as follows:

Step 1:

$$\text{Depreciation Per Unit} = \frac{\text{Cost} - \text{Salvage Value}}{\text{Total Units of Production}} = \frac{\$9,000}{36,000} = \$0.25/\text{unit}$$

Step 2:

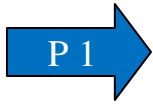
$$\text{Depreciation Expense} = \text{Depreciation Per Unit} \times \text{Number of Units Produced in the Period} = \$0.25 \times 7,000 = \$1,750$$

P 1

UNITS-OF-PRODUCTION DEPRECIATION SCHEDULE

Annual Period	Depreciation for the Period			End of Period	
	Number of Units	Depreciation per Unit	Depreciation Expense	Accumulated Depreciation	Book Value
2010	—	—	—	—	\$10,000
2011	7,000	\$0.25	\$1,750	\$1,750	8,250
2012	8,000	0.25	2,000	3,750	6,250
2013	9,000	0.25	2,250	6,000	4,000
2014	7,000	0.25	1,750	7,750	2,250
2015	5,000	0.25	1,250	9,000	1,000

Units produced and sold during the period.



DOUBLE-DECLINING-BALANCE METHOD

Step 1

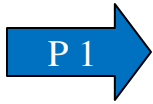
Straight-line rate = $100\% \div \text{Useful life} = 100\% \div 5 \text{ years} = 20\%$

Step 2

Double-declining-balance rate = $2 \times \text{Straight-line rate} = 2 \times 20\% = 40\%$

Step 3

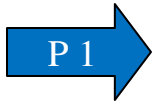
Depreciation expense = **Double-declining-balance rate** \times **Beginning-period book value**
 $40\% \times \$10,000 = \$4,000$



DOUBLE-DECLINING-BALANCE METHOD

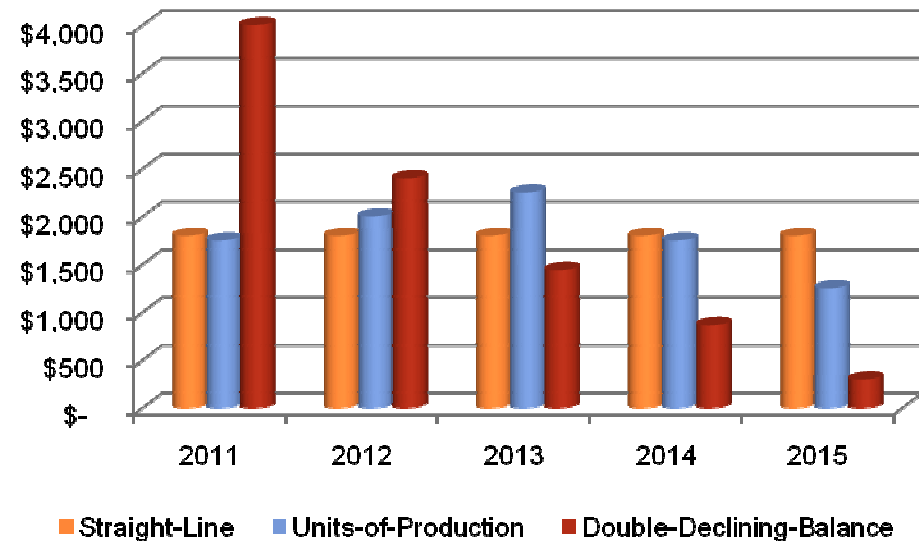
Annual Period	Depreciation for the Period			End of Period	
	Beginning of Period Book Value	Depreciation Rate	Depreciation Expense	Accumulated Depreciation	Book Value
2010	—	—	—	—	\$10,000
2011	\$10,000	40%	\$4,000	\$4,000	6,000
2012	6,000	40	2,400	6,400	3,600
2013	3,600	40	1,440	7,840	2,160
2014	2,160	40	864	8,704	1,296
2015	1,296	40	296*	9,000	1,000

* Year 2015 depreciation is $\$1,296 - \$1,000 = \$296$ (never depreciate book value below salvage value).



COMPARING DEPRECIATION METHODS

Period	Straight-Line	Units of Production	Double-Declining-Balance
2011	\$ 1,800	\$ 1,750	\$ 4,000
2012	1,800	2,000	2,400
2013	1,800	2,250	1,440
2014	1,800	1,750	864
2015	1,800	1,250	296
Totals	<u>\$ 9,000</u>	<u>\$ 9,000</u>	<u>\$ 9,000</u>



DEPRECIATION FOR TAX REPORTING

Most corporations use the Modified Accelerated Cost Recovery System (MACRS) for tax purposes.

MACRS depreciation provides for rapid write-off of an asset's cost in order to stimulate new investment.



C 2

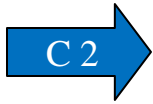
PARTIAL-YEAR DEPRECIATION

When a plant asset is acquired during the year, depreciation is calculated for the fraction of the year the asset is owned.

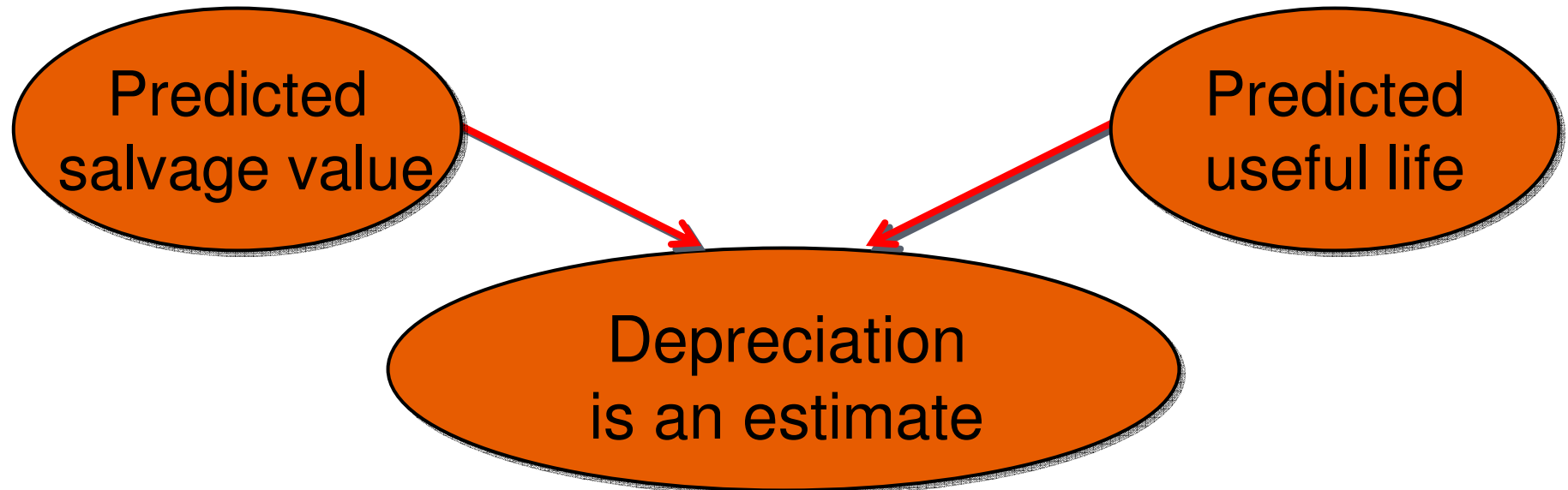
Cost	\$	10,000
Salvage value		1,000
Depreciable cost	\$	9,000
Useful life		
Accounting periods		5 years
Units inspected		36,000 units

Assume our machinery was purchased on October 8, 2010. Let's calculate depreciation expense for 2010, assuming we use straight-line depreciation.

$$\frac{\$10,000 - \$1,000}{5 \text{ years}} \times \frac{3}{12} = \$450$$



CHANGE IN ESTIMATES FOR DEPRECIATION



Over the life of an asset, new information may come to light that indicates the original estimates were inaccurate.

C2

CHANGE IN ESTIMATES FOR DEPRECIATION

Let's look at our machinery from the previous examples and assume that at the beginning of the asset's third year, its book value is \$6,400 (\$10,000 cost less \$3,600 accumulated depreciation using straight-line depreciation). At that time, it is determined that the machinery will have a remaining useful life of 4 years, and the estimated salvage value will be revised downward from \$1,000 to \$400.

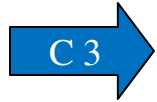
$$\frac{\text{Book value} - \text{Revised salvage value}}{\text{Revised remaining useful life}} = \frac{\$6,400 - \$400}{4 \text{ years}} = \$1,500 \text{ per year}$$

C2

REPORTING DEPRECIATION

Dale Jarrett Racing Adventure	
Office furniture and equipment	\$ 54,593
Shop and track equipment	202,973
Race vehicles and other	975,084
Property and equipment, gross	1,232,650
Less: accumulated depreciation	628,355
Property and equipment, net	\$ 604,295

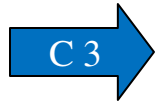




ADDITIONAL EXPENDITURES

Treatment	Financial Statement Effect			
	Statement	Expense	Current Income	Current Taxes
Capital Expenditure	Balance sheet account debited	Deferred	Higher	Higher
Revenue Expenditure	Income statement account debited	Currently recognized	Lower	Lower

If the amounts involved are not material, most companies expense the item.

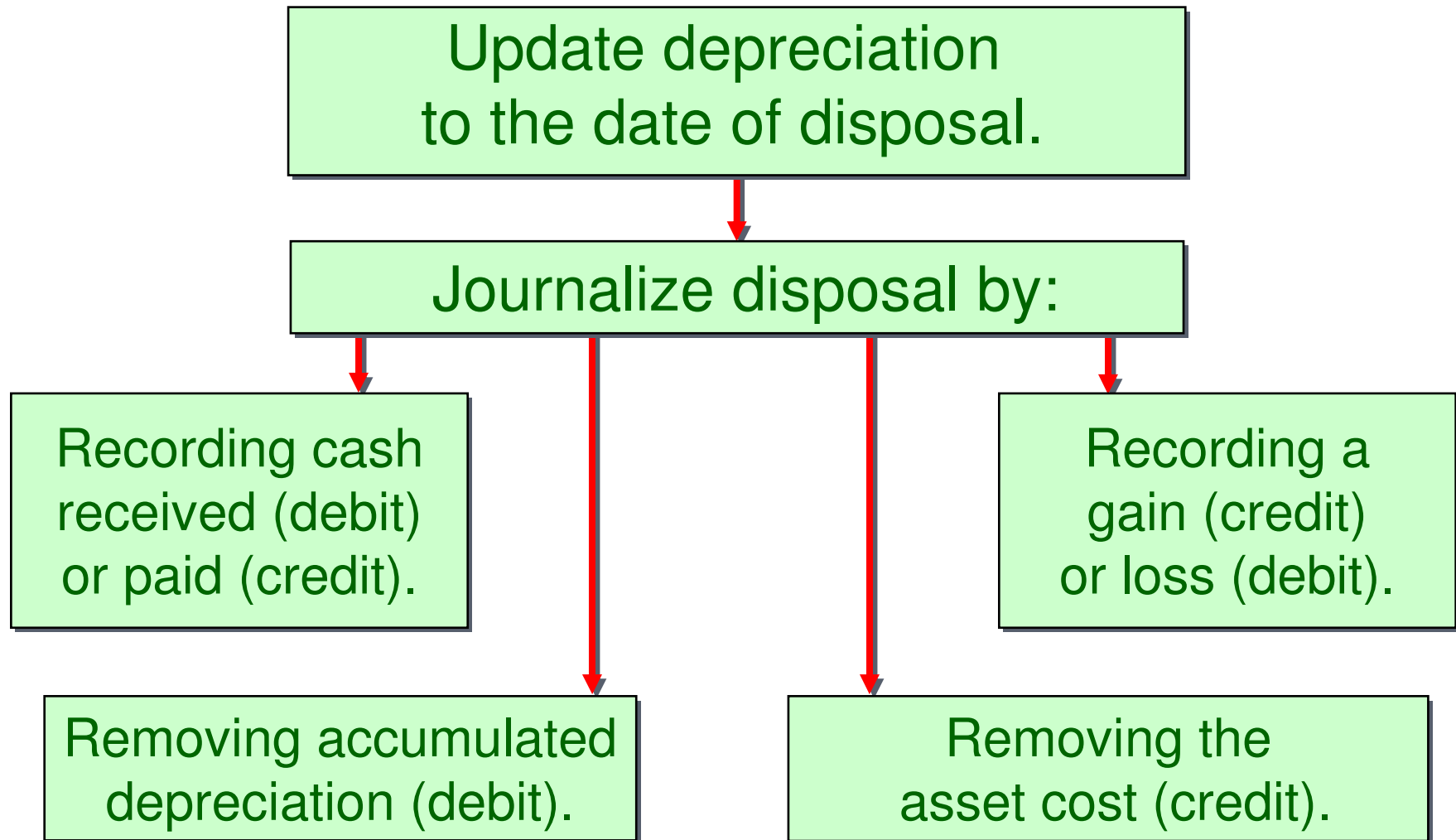


REVENUE AND CAPITAL EXPENDITURES

Type of Expenditure	Capital or Revenue	Identifying Characteristics
<p>Ordinary Repairs</p>	<p>Revenue</p>	<ol style="list-style-type: none"> 1. Maintains normal operating condition. 2. Does not increase productivity. 3. Does not extend life beyond original estimate.
<p>Betterments and Extraordinary Repairs</p>	<p>Capital</p>	<ol style="list-style-type: none"> 1. Major overhauls or partial replacements. 2. Extends life beyond original estimate.

P 2

DISPOSALS OF PLANT ASSETS



P 2

DISCARDING PLANT ASSETS

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)
or paid (credit).

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

Removing accumulated
depreciation (debit).

Removing the
asset cost (credit).

P 2

DISCARDING PLANT ASSETS

A machine costing \$9,000, with accumulated depreciation of \$9,000 on December 31st of the previous year was discarded on June 5th of the current year. The company is depreciating the equipment using the straight-line method over eight years with zero salvage value.

June 5	Accumulated Depreciation—Machinery	9,000	
	Machinery		9,000
	<i>To discard fully depreciated machinery.</i>		

P 2

DISCARDING PLANT ASSETS

Equipment costing \$8,000, with accumulated depreciation of \$6,000 on December 31st of the previous year was discarded on July 1st of the current year. The company is depreciating the equipment using the straight-line method over eight years with zero salvage value.

Step 1: Bring the depreciation up-to-date.

July 1	Depreciation Expense	500	
	Accumulated Depreciation—Equipment		500
	<i>To record 6 months' depreciation ($\\$1,000 \times 6/12$).</i>		

Step 2: Record discarding of asset.

July 1	Accumulated Depreciation—Equipment	6,500	
	Loss on Disposal of Equipment	1,500	
	Equipment		8,000
	<i>To discard equipment with a \$1,500 book value.</i>		

P 2

SELLING PLANT ASSETS

On March 31st, BTO sells equipment that originally cost \$16,000 and has accumulated depreciation of \$12,000 at December 31st of the prior calendar year-end. Annual depreciation on this equipment is \$4,000 using straight-line depreciation. The equipment is sold for \$3,000 cash.

Step 1: Update depreciation to March 31st.

March 31	Depreciation Expense	1,000	
	Accumulated Depreciation—Equipment		1,000
	<i>To record 3 months' depreciation ($\\$4,000 \times 3/12$).</i>		

Step 2: Record sale of asset at book value ($\$16,000 - \$13,000 = \$3,000$).

March 31	Cash	3,000	
	Accumulated Depreciation—Equipment	13,000	
	Equipment		16,000
	<i>To record sale of equipment for no gain or loss.</i>		

P 2

SELLING PLANT ASSETS

On March 31st, BTO sells equipment that originally cost \$16,000 and has accumulated depreciation of \$12,000 at December 31st of the prior calendar year-end. Annual depreciation on this equipment is \$4,000 using straight-line depreciation. The equipment is sold for \$2,500 cash.

Step 1: Update depreciation to March 31st.

March 31	Depreciation Expense	1,000	
	Accumulated Depreciation—Equipment		1,000
	<i>To record 3 months' depreciation (\$4,000 × 3/12).</i>		

Step 2: Record sale of asset at a loss (Book value \$3,000 - \$2,500 cash received).

March 31	Cash	2,500	
	Loss on Disposal of Equipment	500	
	Accumulated Depreciation—Equipment	13,000	
	Equipment		16,000
	<i>To record sale of equipment for a \$500 loss.</i>		

P 3

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

P 3

COST DETERMINATION AND DEPLETION

Let's consider a mineral deposit with an estimated 250,000 tons of available ore. It is purchased for \$500,000, and we expect zero salvage value.

Step 1

$$\text{Depletion per unit} = \frac{\text{Cost} - \text{Salvage value}}{\text{Total units of capacity}} = \frac{\$500,000 - \$0}{250,000 \text{ tons}} = \$2 \text{ per ton}$$

Step 2

$$\begin{aligned} \text{Depletion expense} &= \text{Depletion per unit} \times \text{Units extracted and sold in period} \\ &= \$2 \times 85,000 = \$170,000 \end{aligned}$$

P 3

DEPLETION OF NATURAL RESOURCES

Depletion expense in the first year would be:

Dec. 31	Depletion Expense—Mineral Deposit	170,000	
	Accumulated Depletion—Mineral Deposit		170,000
	<i>To record depletion of the mineral deposit.</i>		

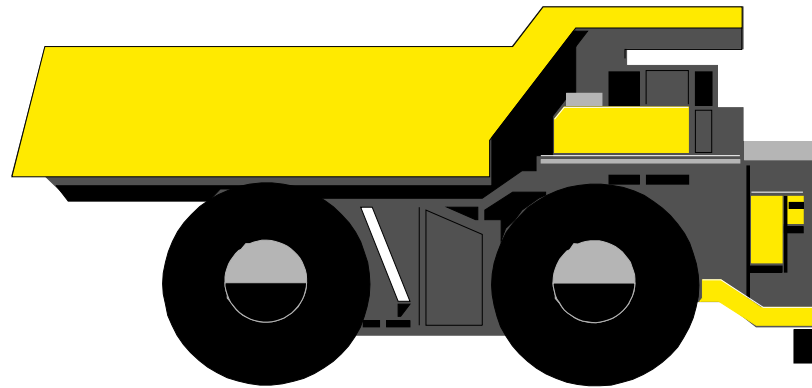
Balance Sheet presentation of natural resources:

Mineral deposit	\$500,000	
Less accumulated depletion	<u>170,000</u>	\$330,000



P 3

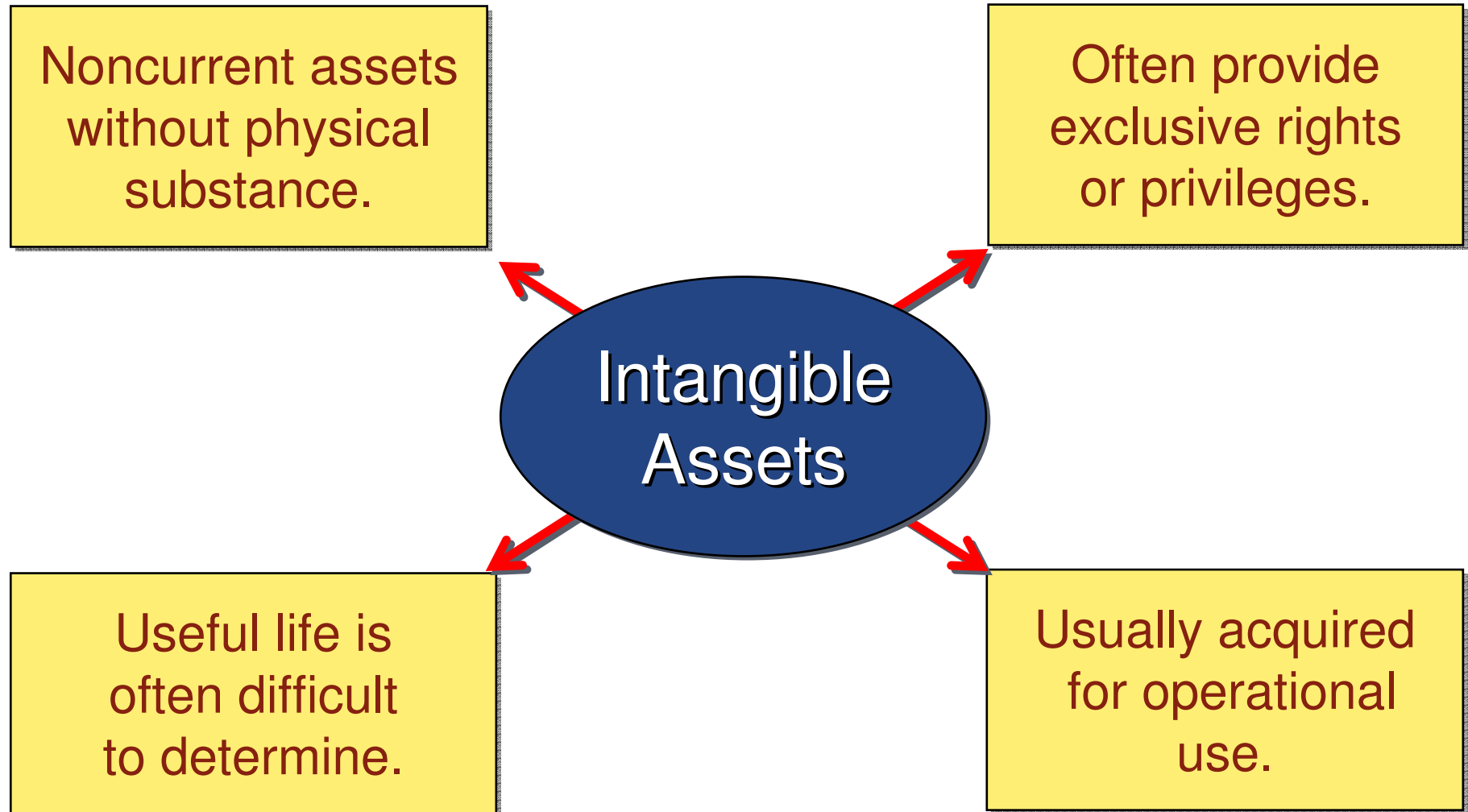
PLANT ASSETS USED IN EXTRACTING



- Specialized plant assets may be required to extract the natural resource.
- These assets are recorded in a separate account and depreciated.

P4

INTANGIBLE ASSETS



P 4

COST DETERMINATION AND AMORTIZATION

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



- o Patents
- o Copyrights
- o Leaseholds
- o Leasehold Improvements
- o Franchises and Licenses
- o Goodwill
- o Trademarks and Trade Names
- o Other Intangibles



GLOBAL VIEW

There is one area where notable differences exist, and that is in accounting for changes in the value of plant assets (between the time they are acquired and disposed of). Namely, how does IFRS and U.S. GAAP treat decreases and increases in the value of plant assets subsequent to acquisition?

Decreases in the Value of Plant Assets
Both U.S. GAAP and IFRS require that an impairment in value be recognized.

Increases in the Value of Plant Assets
U.S. GAAP prohibits recording increase in value of plant assets. IFRS permits upward asset revaluation.

A1

TOTAL ASSET TURNOVER

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

Provides information about a company's efficiency in using its assets.

Company	\$ in millions	2008	2007	2006	2005
Molson Coors	Net sales	\$ 4,774	\$ 6,191	\$ 5,845	\$ 5,507
	Average total assets	11,934	12,528	11,701	8,228
	Total asset turnover	0.40	0.49	0.50	0.67
Boston Beer	Net sales	\$ 398	\$ 342	\$ 285	\$ 238
	Average total assets	208	176	137	113
	Total asset turnover	1.91	1.94	2.09	2.10

P5

10A – EXCHANGING PLANT ASSETS

Many plant assets such as machinery, automobiles, and office equipment are disposed of by exchanging them for newer assets. In a typical exchange of plant assets, a trade-in allowance is received on the old asset and the balance is paid in cash. Accounting for the exchange of assets depends on whether the transaction has **commercial substance.**

Commercial substance implies the company's future cash flows will be altered.

P5

EXCHANGE WITH COMMERCIAL SUBSTANCE: A LOSS

A company acquires \$42,000 in new equipment. In exchange, the company pays \$33,000 cash and trades in old equipment. The old equipment originally cost \$36,000 and has accumulated depreciation of \$20,000 (book value is \$16,000). This exchange has commercial substance. The old equipment has a trade-in allowance of \$9,000.

Asset Exchange Has Commercial Substance	Loss
Market value of asset received	\$ 42,000
Book value of assets given:	
Equipment (\$36,000 – \$20,000)	\$16,000
Cash	<u>33,000</u>
	<u>49,000</u>
Gain (loss) on exchange	<u><u>\$(7,000)</u></u>

Jan. 3	Equipment (new)	42,000	
	Loss on Exchange of Assets	7,000	
	Accumulated Depreciation—Equipment (old)	20,000	
	Equipment (old)		36,000
	Cash		33,000
	<i>To record exchange (with commercial substance) of old equipment and cash for new equipment.</i>		

P5

EXCHANGES WITHOUT COMMERCIAL SUBSTANCE

Let's assume the same facts as on the previous screen except that the market value of the new equipment received is \$52,000 and the transaction lacks commercial substance.

Cost of old equipment	\$ 36,000
Less accumulated depreciation	<u>20,000</u>
Book value of old equipment	16,000
Cash paid in the exchange	<u>33,000</u>
Cost recorded for new equipment	<u><u>\$49,000</u></u>

Jan. 3	Equipment (new)	49,000	
	Accumulated Depreciation—Equipment (old)	20,000	
	Equipment (old)		36,000
	Cash		33,000
	<i>To record exchange (without commercial substance) of old equipment and cash for new equipment.</i>		

END OF CHAPTER 10

