CHAPTER 9

Plant Assets and Intangibles

Chapter Overview

This chapter begins by explaining which assets are included in three categories of plant assets and the related expenses for each. Students learn how to determine the cost of various plant assets. The relative-sales-value method is used to divide a lump-sum purchase of assets into component parts (land, building, and so on) in order to identify the cost of each asset. Capital expenditures are compared to ordinary repairs.

A detailed discussion of depreciation begins by explaining that depreciation is a method of matching expenses against revenue and not a valuation process nor a fund of cash for replacing assets. Estimated useful life and residual value are explained. Three depreciation methods are presented, including straight-line, units-of-production, and double-declining balance. The methods are illustrated and compared, showing that an equal amount of depreciation is taken over the total useful life of the asset. A discussion of depreciation and income taxes is included, explaining how the accelerated method has a cash-flow advantage over the straight-line method. Accounting for changes in estimated useful life or residual value is discussed. A mid-chapter summary problem allows the student to practice using the different depreciation methods.

Partial-year depreciation is illustrated. Next, students learn about the gains and losses on disposal of plant assets. Disposals are illustrated, including junked assets, selling assets, and exchanging plant assets.

The chapter continues with coverage of depletion of natural resources and amortization of intangible assets. Research and development costs are mentioned, followed by ethical issues in accounting for plant assets. Decision guidelines related to plant assets and related expenses and a final summary problem covering partial-year calculations and sale of plant assets, conclude the chapter.
Chapter 9: Teaching Outline

1) Discuss the categories of plant assets and related expenses.
   a) Real or Tangible Assets
   b) Intangible Assets
   c) Natural Resource Assets
   d) Exhibit 9-1 Plant Assets and Their Related Expenses

2) Define the cost principle.
   a) Land and Land Improvements
   b) Exhibit 9-2 Measuring the Cost of Land
   c) Buildings
   d) Machinery and Equipment
   e) Furniture and Fixtures

3) Illustrate the relative-sales-value method to allocate a lump-sum purchase of assets into component parts.

4) Distinguish capital expenditures from ordinary.
   a) Exhibit 9-3 Delivery Truck Expenditures—Capital Expenditure or Expense?

5) Define and discuss depreciation.
   a) Exhibit 9-4 Depreciation and the Matching of Expense with Revenue
   b) Causes of depreciation
   c) Cost
   d) Estimated Useful Life
   e) Estimated Residual Value

6) Illustrate and compare the methods of depreciation.
   a) Exhibit 9-5 Data for Recording Depreciation on a Truck
b) Exhibit 9-6 Straight-line Depreciation for a Truck  
c) Exhibit 9-7 Units-of-Production Depreciation for a Truck  
d) Exhibit 9-8 Double-Declining-Balance Depreciation for a Truck  
e) Exhibit 9-9 Depreciation Patterns for the Various Methods  
f) Exhibit 9-10 Annual Depreciation by Method  

7) Discuss the accounting for changes in estimated useful life or residual value.  

8) Illustrate the disposal of plant assets.  

a) Exhibit 9-11 Five Options to Dispose of the Truck  
   i) Situation A—Scrap the Truck  
   ii) Situation B—Sell the Truck for $10,000  
   iii) Situation C—Sell the Truck for $20,000 and $5,000 Equipment  
   iv) Situation D—Trade the Truck for a Toyota Truck  
   v) Situation E—Trade the Truck and $3,000 Cash for a Toyota Truck  

9) Define natural resources and illustrate the accounting for natural resources.  
   a) Depletion Expense using Units-of-Production  

10) Define intangible assets and illustrate the accounting for intangible assets.  
    a) Amortization Expense  

11) Discuss the ethical issues in accounting for plant assets.
Chapter 9: Summary Handout for Students

1. Three categories of plant assets and related expenses:
   - Real or Intangible Assets → Depreciation
   - Intangible Assets → Amortization
   - Natural Resources Assets → Depletion

2. Assets are measured using the cost principle.
   - Cost = total of all costs incurred to bring asset to its intended use, net of all discounts

3. Types of plant assets:
   - Land and Land Improvements
     - The cost of land is not subject to depreciation, while the cost of land improvements are depreciated.
   - Buildings
   - Machinery and Equipment
   - Furniture and Fixtures
   - Lump-Sum (Basket) Purchase of Assets
     - Allocate purchase using relative-sales-value method

4. Capital expenditures versus ordinary expenses:
   - Capital expenditures increase an asset’s capacity or efficiency, or extend its useful life → increase (i.e., debit) asset
   - Expenses maintain an asset in working order → increase (i.e., debit) expense account

5. Depreciation allocates a plant asset’s cost to expense over its useful life.
   - The journal entry to record depreciation is a debit to depreciation expense and a credit to accumulated depreciation (a contra-asset account).
   - Book Value of an Asset = Asset’s Cost – Accumulated Depreciation
   - Straight-Line Depreciation = (Cost – Residual Value)/Estimated Useful Life
   - Units-of-Production Depreciation per Unit of Output = (Cost – Residual Value)/Life in Units of Output
     - Units-of-Production Depreciation per Unit of Output × Number of Units = Depreciation Expense
   - Double-Declining Balance (DDB) Depreciation = (Cost – Accumulated Depreciation) × 2/Estimated Useful Life
     - DDB is the only method that uses book value (cost-accumulated depreciation) to calculate depreciation
o Multiply annual depreciation × # of months/12 for partial year’s depreciation.
o Do not depreciate an asset below its estimated residual value.

6. If there is a change in an asset’s estimated useful life or residual value, depreciate the remaining depreciable book value over the asset’s remaining life.

7. Four steps to recording disposals of plant assets:
o Record current year’s depreciation up to date of disposal.
o Remove the old, disposed of asset from the accounting records by crediting the asset and debiting the related accumulated depreciation. (DO NOT NET THE TWO AMOUNTS!!!)
o Record the value of any cash (or other accounts) paid (or received) for the asset.
o Determine the difference between the total debits and total credits, if any, made in the journal entry.

 ▪ If the transaction was a like-kind exchange, then the net difference will be recorded as a debit to the new asset account.
 ▪ If the transaction was a non-like kind trade, then the net difference will be recorded as a gain or loss on sale (or disposal). (If a credit is needed to balance the journal entry, record a Gain on sale or disposal; if a debit is needed to balance the journal, record a Loss on sale or disposal; if total debits = total credits, then there is no Gain or Loss on sale or disposal of the asset.)

8. Natural resources are plant assets that come from the earth.
o The journal entry to record depletion is a debit to depletion expense and a credit to accumulated depletion (a contra-asset account).
o Depletion expense is recorded using units-of-production formula:

 ▪ Depletion expense = (Cost – Residual value)/Estimated total units of natural resources × Number of units sold

9. Intangible assets have no physical form but derive their value from the rights associated with ownership of the asset.
o The journal entry to record amortization is a debit to amortization expense and a credit to the related asset account.
o Amortize over the assets’ estimated useful life by the straight-line method.
o Intangible assets having indefinite lives are not amortized.

10. Work sheets to print for in-class practice (bookmatch), as specified by your instructor.
11. Myaccountinglab.com homework algorithmic assignments:
o E9-15; E9-17; E9-19; E9-20; E9-22;9-23; E9-24; E9-25; E9-26; P9-29A; P9-30A
Lecture Outline Tips: Key Topics

Improper handling of capital expenditures can result in incorrect financial statements. Incorrect expensing will understate net income and understate assets. Incorrect capitalization will overstate income and overstate assets. This can be a “grey” area in practice and results in accountants having to use their professional judgment.

Depreciation is an allocation of cost to expense and does not reflect the FMV changes in an asset. An asset could be worth a lot more than its book value on the balance sheet (land and buildings, for example). Depreciation is also a noncash expense. It reduces income, but not cash flow.

The three depreciation methods in the textbook all result in the same TOTAL depreciation over the estimated useful life of the asset. What can vary is the annual depreciation. Accumulated depreciation is a contra asset, not a liability account, and is subtracted from the asset cost to arrive at book value. Again, book value does not reflect fair market value.

When using units of production, do not over-depreciate the asset. The total units of production are an estimate up front; once that amount is reached, depreciation should cease. When using double declining balance, residual value is ignored for calculation purposes, but not for book value purposes. The asset cannot be depreciated below residual value.

Tax depreciation is based on IRS regulations, and can result in different amounts of depreciation for financial statements and the tax return, called book-tax differences.

Various methods can be used for partial year depreciation, but a company should be consistent in the application. When purchasing an asset in mid-year, do not forget about the carryover depreciation in the last year. For example, a company using straight-line for a five year asset purchased in mid-year will have six years of depreciation.

When an asset is disposed of, the journal entry should remove the asset account AND the related accumulated depreciation. These amounts cannot be netted into one number, because it involves separate accounts. Students may want to credit the asset for the net amount, which would still result in the correct gain or loss being recognized, but would be an incorrect entry.

There are terminology differences for natural resources and intangibles. Natural resources are depleted and intangibles (with a definite life) are amortized, whereas tangible assets are depreciated. Generally speaking, the units of production method is used for natural resources and the straight line method is used for intangibles (with a definite life). Natural resources have an accumulated depletion account similar to accumulated depreciation. There is no accumulated amortization account for intangibles; the asset account is directly credited in the amortization journal entry. When evaluating intangibles with definite lives, there can be differences between legal life and useful life. The useful life is used for amortization purposes.
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End of Chapter Exercises and Problems Available in Alternate Accounting Software Programs:
Excel Templates: P9-29A; P9-30A; P9-31A
QuickBooks: P9-29A; P9-30A; P9-31A
Peachtree: P9-29A; P9-30A; P9-31A
General Ledger: P9-29A; P9-30A; P9-31A

Pre-Test Questions on MyAccountingLab: S9-1 (1), S9-3 (2), S9-8 (3), S9-10 (4), S9-11 (5), S9-12 (6)
Post-Test Questions on MyAccountingLab: P9-35B (2,3), P9-36B (15–20)

Answer Key to Chapter 9 Quiz:

1. D
2. C
3. A
4. C
5. B
6. A
7. B
8. C
9. B
10. D
CHAPTER 9

TEN-MINUTE QUIZ

Circle the letter of the best response.

1. Adams Company purchased a tract of land, an office building, and some manufacturing equipment for $775,000. The appraised value of the land, building, and equipment were $373,100, $427,700, and $109,200, respectively. What was the debit to the Building account to record the purchase?
   A. $427,700
   B. $303,333
   C. $258,333
   D. $364,250

Table 9-1
On January 1, 20X9, Lunsford Equipment Company purchased a new computerized security system for $130,000. It expects to use the system for five years, after which it can be sold for $6,500.

2. Refer to Table 9-1. What is the book value of the equipment on December 31, 201X, if Lunsford uses the straight-line method of depreciation?
   A. $49,400
   B. $74,100
   C. $80,600
   D. $105,300

3. Refer to Table 9-1. If Lunsford uses the double-declining-balance method of depreciation, what is depreciation expense for 201X?
   A. $31,200
   B. $29,640
   C. $83,200
   D. $52,000

4. Refer to Table 9-1. Lunsford uses the straight-line method of depreciation and sells the equipment for $30,000 at the end of the four years. The journal entry to record the sale will include which of the following?
   A. $31,200 credit to Equipment
   B. $5,300 credit to Gain on the sale of equipment
   C. $98,800 debit to Accumulated depreciation
   D. $1,200 credit to Loss on the sale of equipment

5. Refer to Table 9-1. Assume that Lunsford uses straight-line depreciation. After recording two full years of depreciation, the company decides the system will last a total of six years, rather than five. Residual value at the end of six years will be $8,000. What is 2011 depreciation expense?
   A. $16,525
   B. $18,150
   C. $24,200
   D. $20,150
6. In 20X9, Mountain Ore, Inc., paid $8,250,000 for land with an estimated 600,000 tons of ore. Mountain Ore plans to sell the land for $300,000 when all of the ore has been extracted. In 20X7, 24,000 tons of ore were mined and sold. What is depletion expense for the year?
   A. $318,000
   B. $330,000
   C. $300,000
   D. $325,000

7. Speedy Deliveries Services owns and operates a fleet of delivery vehicles. Which of these is (are) considered to be an ordinary repair by Speedy?
   A. Major engine overhaul
   B. Replace dead battery
   C. Add hydraulic lift to back of truck
   D. Both B and C are ordinary repairs.

8. Which of the following statements is false?
   A. Land is never depreciated.
   B. An asset’s residual value and useful life must be estimated in order to compute depreciation.
   C. At the end of its useful life, the remaining book value of an asset will always equal its fair market value.
   D. The units-of-production method is most appropriate for an asset that wears out due to physical use.

9. Which of the following is (are) accounted for as intangible assets?
   A. Land improvements
   B. Goodwill
   C. Research and development
   D. All of the above are intangible assets.

10. Which of these is a true statement?
    A. Straight-line depreciation is most often used for tax purposes.
    B. The units-of-production method results in lower depreciation and therefore higher net income in the years when an asset is more productive.
    C. Double-declining-balance depreciation results in the greatest amount of depreciation expense recorded over the asset’s life.
    D. MACRS depreciation creates a cash advantage over straight-line because higher amounts of depreciation are deducted early in the life of an asset, allowing tax savings to be invested.