1. HOW DOES A BUSINESS MEASURE THE COST OF A PLANT ASSET?

- **Plant assets** are long-lived, tangible assets used in the operation of a business. These include land, buildings, equipment, furniture, and automobiles. They may be referred to as *Property, Plant and Equipment* or *Fixed Assets*.

- Plant assets are long-term assets. This requires a business to allocate the cost of the asset over the years that the asset is expected to be used. This allocation of a plant asset’s cost over its useful life is called **depreciation** and follows the matching principle.

- Plant assets are used in the operation of a business, so they are not bought for resale.

- Plant assets are recorded at historical cost – the amount paid for the asset. This follows the **cost principle** which states that acquired assets (and services) should be recorded at their actual cost.

- The actual cost of a plant asset is its purchase price plus taxes, purchase commissions, and all other amounts paid to ready the asset for its intended use.

a. Land and Land Improvements

- Land Improvement – a depreciable improvement to land, such as fencing, sprinklers, paving, signs and lighting.

- Land improvements are subject to depreciation.

- Land is not a depreciable item.

- To record the purchase of land that is to be paid out:
  - Land is the debited amount.
  - Notes Payable is a credited amount.
  - Cash is a credited amount.

- **Capitalized** means that an asset account was debited (increased) because the company acquired an asset.

b. Buildings

- The cost of a building depends on whether the company is constructing the building itself or is buying an existing one. These costs include the following:
  - Constructing a Building
    - Architectural fees
    - Building permits
    - Contractor charges
    - Payments for material, labor, and miscellaneous costs
  - Purchasing an Existing Building
    - Purchase price
    - Costs to renovate the building to ready the building for use, which may include any of the charges listed under “constructing a building”

c. Machinery and Equipment

- The cost of machinery and equipment includes the following:
  - Purchase price (less any discounts)
  - Transportation charges
  - Insurance while in transit
  - Sales tax and other taxes
  - Purchase commission
d. Furniture and Fixtures

- The cost of furniture and fixtures includes the basic cost of each asset (less any discounts), plus all other costs to ready the asset for its intended use.

e. Lump-Sum Purchase

- A company may pay a single price for several assets as a group – a lump-sum purchase.

  - **Relative-Market-Value Method** is a method of allocating the total cost (100%) of multiple assets purchased at one time. Total cost is divided among the assets according to their relative market values.

  
  \[
  \text{Total market value} = \text{Land market value} + \text{Building market value} \\
  \text{Percentage of total value} = \frac{\text{Land market value}}{\text{Total market value}} \\
  \text{Percentage of total value} = \frac{\text{Building market value}}{\text{Total market value}}
  \]

f. Capital and Revenue Expenditures

- A **capital expenditure** is debited to an asset account because it increased the asset’s capacity or efficiency or extends the asset’s useful life.

- An **extraordinary repair** is a capital expenditure because it extends the asset’s capacity or useful life. An example would be spending $3000 to rebuild the engine of a 5-year old truck.

- **Revenue expenditure** is an expenditure that does not increase the capacity or efficiency of an asset or extend its useful life. Revenue expenditures are debited to an expense account. For example, the company buys new tires for the truck at a total cost of $500.

  - **Capital expenditures – debit an asset account**
    - Extraordinary repairs
      - Major engine or transmission overhaul
      - Modification for new use
      - Addition to storage capacity
      - Anything that increases the life of the asset

  - **Revenue Expenditure – debit Repairs and Maintenance Expense**
    - Revenue Expenditures:
      - Repair of transmission or engine
      - Oil change, lubrication, and so on
      - Replacement of tires or windshield
      - Paint job

2. WHAT IS DEPRECIATION AND HOW IS IT COMPUTED?

- Depreciation matches the expense against the revenue generated from using the asset to measure net income.

- All assets, except land, wear out as they are used.

- An asset is obsolete when a newer asset can perform the job more efficiently.

- Depreciation is not a process of valuation. Businesses do not record depreciation on changes in the asset’s market value.

- Depreciation does not mean that the business sets aside cash to replace an asset when it is used up. Depreciation has nothing to do with cash.
a. Factors in Computing Depreciation

- Depreciation of a plant asset is based on 3 main factors:
  - Capitalized cost – which is known cost and all items spent for the asset to perform its intended function.
  - Estimated useful life – is how long the company expects it will use the asset.
  - Estimated residual value – also called salvage value – is the asset’s expected value at the end of its useful life.

- **Depreciable Cost** is the cost of a plant asset minus its estimated residual value.

b. Depreciation Methods

- There are many depreciation methods for plant assets, but 3 are used most commonly:
  - Straight-line method – allocates an equal amount of depreciation to each year and is calculated as follows:
    - Straight-line depreciation = (cost – residual value) / Useful life
    - Recorded as: Depreciation Expense – (item) as the debit; Accumulated Depreciation – (item) as the credit
    - The book value is a depreciable asset’s cost minus accumulated depreciation.
  - Units-of-Production method – a depreciation method that allocates a varying amount of depreciation each year based on an asset’s usage.
    - Step 1 – Depreciation per unit = (cost – residual value)/Useful life in units
    - Step 2 – Units-of-production depreciation = depreciation per unit X Current year usage
  - Double-Declining-Balance Method = an accelerated depreciation method that computes annual depreciation by multiplying the depreciable asset’s decreasing book value by a constant percent that is two times the straight-line depreciation rate.
    - An accelerated depreciation method expenses more of the asset’s cost near the start of an asset’s life and less at the end of its useful life.
    - Double-Declining-Balance depreciation = (cost – accumulated depreciation) X 2 X (1/Useful life)
    - Note that residual value is not included in the formula.

- Comparing Depreciation Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Asset Characteristics</th>
<th>Effect of Depreciation</th>
<th>Example Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight-Line</td>
<td>Generates revenue evenly over time</td>
<td>Equal amount each period</td>
<td>Building</td>
</tr>
<tr>
<td>Units-of-Production</td>
<td>Depreciates due to wear and tear rather than obsolescence</td>
<td>More usage causes larger depreciation</td>
<td>Vehicles (miles), Machinery (machine hours)</td>
</tr>
<tr>
<td>Double-Declining-Balance</td>
<td>Produces more revenue in early years</td>
<td>Higher depreciation in early years, less later</td>
<td>Computers</td>
</tr>
</tbody>
</table>

- The IRS requires that companies use a specific depreciation method for tax purposes. This method is the Modified Accelerated Cost Recovery System (MACRS).
  - Under MACRS, assets are divided into specific classes, such as 3-year, 5-year, 7-year, and 39-year property.

c. Partial-Year Depreciation

- If depreciation has to be figured in the middle of a fiscal year, then use the formula:
  - Straight-Line depreciation = [(cost – residual value)/useful life] X (# of months / 12)

d. Changing Estimates of a Depreciable Asset
Estimating the useful life and residual value of a plant asset poses a challenge. The estimate might be too long or too short.

Revised Depreciation = (Book value – residual value) / revised useful life remaining

e. Reporting Plant Assets

Plant assets are reported at book value on the balance sheet.

3. HOW ARE DISPOSALS OF PLANT ASSETS RECORDED?

Several options:
- Discard the plant asset.
- Sell the plant asset.
- Exchange the plant asset for another plant asset.

There are 4 steps regardless of the method:
- Bring the depreciation up to date.
- Remove the old, disposed-of asset and associated accumulated depreciation from the books.
- Record the value of any cash received (or paid) in the disposal of the asset.
- Determine the amount of any gain or loss. Gain or loss is determined by comparing the cash received and the market value of any other assets received with the book value of the asset disposed of.

a. Discarding Plant Assets

- Discarding of plant assets involves disposing of the asset for no cash.
- Accumulated Depreciation –Equipment is the debit; Equipment is the credit.
- When calculating gain or loss, don’t forget to update the accumulated depreciation account.

b. Selling Plant Assets

- Companies will often sell a plant asset for cash.
- Selling a plant asset at book value
  - Cash and Accumulated Depreciation – (item) are both debits; (item) is credit.
- Selling a plant asset above book value
  - Cash and Accumulated Depreciation – (item) are both debits; (item) and Gain on Disposal are both credits.
- Selling a plant asset below book value
  - Cash, Accumulated Depreciation – (item) and Loss on Disposal are all 3 debited; (item) is credited.

4. HOW ARE NATURAL RESOURCES ACCOUNTED FOR?

- Natural resources are assets that come from the earth that are consumed.
- Depletion is the process by which businesses spread that allocation of a natural resource’s cost over its usage.
- Depletion per unit = (Cost – Residual value) / Estimated total units
- Depletion expense = Depletion per unit X Number of units extracted

5. HOW ARE INTANGIBLE ASSETS ACCOUNTED FOR?

- Intangible assets are assets that have no physical form.

a. Accounting for Intangibles
Intangible assets that are purchased are recorded at cost. Most purchased intangibles are expensed through amortization, the allocation of the cost of an intangible asset over its useful life. Only intangibles that have a definite life are amortized. Intangible assets with an indefinite life are tested for impairment annually. Impairment occurs when the fair value of an asset is less than the book value.

b. Specific Intangibles

- Patents
  - A patent is an intangible asset that is a federal government grant conveying an exclusive 20-year right to produce and sell an invention.
  - The invention may be a process, product, or formula.
  - Record: Patent as the debit and Cash as the credit.
- Copyrights and Trademarks
  - A copyright is the exclusive right to reproduce and sell a book, musical composition, film, other work of art, or intellectual property.
  - Issued by the federal government, a copyright is granted for the life of the creator plus 70 years.
  - A company may pay a large sum to purchase an existing copyright.
  - A trademark (also called trade name) is an asset that represents distinctive products or services, such as the Nike “swoosh” or the NASCAR number 3 for Dale Earnhardt.
  - The cost of a trademark or trade name is amortized over its useful life.
- Franchises and Licenses
  - Franchises are privileges granted by a business to sell goods or services under specified conditions.
  - Licenses are privileges granted by a government to use public property in performing services.
    - Example – radio stations
  - The acquisition cost of a franchise or license is amortized over its useful life.
- Goodwill
  - In accounting, goodwill is the excess of the cost to purchase another company over the market value of its net assets (assets minus liabilities).

c. Reporting of Intangible Assets

<table>
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<tr>
<th>Asset</th>
<th>Related Expense</th>
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<tbody>
<tr>
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<td>Depletion</td>
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<tr>
<td>Intangible Assets</td>
<td>Amortization</td>
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6. HOW DO WE USE THE ASSET TURNOVER RATIO TO EVALUATE BUSINESS PERFORMANCE?

- The asset turnover ratio measures the amount of net sales generated for each average dollar of total assets invested.
- Asset turnover ratio = Net sales / Average total assets

7. HOW ARE EXCHANGES OF PLANT ASSETS ACCOUNTED FOR?

- An exchange has commercial substance if the future cash flows change as a result of the transaction.
- Commercial Substance is a characteristic of a transaction that causes a change in future cash flows.