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Module 10

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Module 10 Summary

I. Classification of Long-Term Assets

- A. *Account classification* simply refers to the way the accounts are presented on the balance sheet (that is, the heading under which they will be listed).
- B. In Module 4, we introduced the *classified balance sheet*. Accounts were *classified* (arranged) according to type, and they were listed on the balance sheet under various classification headings. The headings used in Module 4 are listed below.
- Current Assets
 - Property Plant and Equipment
 - Current Liabilities
 - Long-term Liabilities
 - Owner's Equity (for sole proprietorships) or Stockholders' Equity (for corporations)
- C. As we learned in Module 4, *Property, Plant and Equipment assets* (also called *fixed assets* or *plant assets*) are *non-current assets* that will benefit the business for long periods of time (more than one year). In this module, two new long-term asset classifications are introduced: *Intangible Assets* and *Long-Term Investments*.
- a. *Intangible assets* will be examined in this module, along with property, plant and equipment assets. *Long-term investments* will be introduced here, but they will not be covered in depth until we reach Module 15.
- c. In order to prepare the balance sheet correctly, we must be able to properly classify the accounts. And in order to do that, we must understand how these account classifications are *defined*.
- D. *Property, Plant and Equipment assets* are defined as ***tangible assets*** with ***useful lives of more than one year*** that are ***used in operations*** and that ***are not intended for resale to customers***.
1. Since this definition specifically states that plant assets have lives in excess of one year, it differentiates *fixed assets* (having useful lives of *more than one year*) from *current assets* (such as supplies, receivables, or prepaid insurance) that will be used up or converted

into cash within a year. It also indicates that long-term inventories cannot be listed among the fixed assets.

2. In addition, the definition distinguishes the fixed assets that are *used in the operation of the business* (such as drill presses, office equipment, etc.), from *investments* (things such as mutual funds, bonds, and stock investments that are not directly used to operate the business).
2. Note also that this definition, because it states that fixed assets are *tangible assets* (those that have physical substance), differentiates them from *intangible assets* (those that do not have physical substance).

D. **Intangible Assets** are defined as assets that are *intangible* (lacking physical substance) with **useful lives of more than one year** that are **used in operations**. Except for the part about “intangibility,” this is obviously the same definition that we have for fixed assets.

1. An “*intangible asset?*” No “*physical substance?*” This probably makes no sense to you. How can an asset not have “physical substance?” Are we talking about ghostly apparitions that can only vaguely be seen when the clock strikes 12?
2. Before we call in the Ghost Busters, let’s stop and think. We have actually encountered assets that do not have physical substance in previous modules. *Accounts receivable*, for example, have no physical substance. Neither do *prepaid insurance* and *prepaid rent*. These things are assets, though, even though they have no physical substance. They represent legal rights that will benefit the business today, tomorrow, and on into the future. However, they are short-term in nature, so they are classified as *current assets* rather than intangibles. Long-term legal rights, such as trademarks, patents and copyrights, will be classified as intangible assets. There are a few other kinds of intangibles, too, but they are mostly long-term legal rights.

E. **Long-term Investments** are defined as assets that are either *tangible or intangible* with **useful lives of more than one year** that are **not used in operations**. Except for the requirement that they *not* be used in operations, this coincides with the definitions we have for fixed assets and intangible assets.

1. According to the definition, a long-term investment can be either tangible or intangible. That means that an investment in real estate (a tangible asset) can be classified as an investment, and an investment in IBM common stock (an intangible) can as well.

2. The investment must be long term in nature. Short-term investments (less than a one year holding period) are current assets.
3. The investment cannot be used in business operations. That means that a factory building and the land beneath it cannot be called a long-term investment if operations are being carried out in the building. However, land purchased and held for the site of a new factory building can, since it is not yet being used in the operation of the business. Here are some examples of various assets and their classifications:

Asset	Classification	Explanation
Equipment used to produce inventory items.	Fixed Asset	The equipment is presumed to have a useful life of more than one year, it is tangible, and used in operations.
Copyrights purchased by a publisher in order to produce books for sale.	Intangible Asset	A copyright gives the publisher the legal right to produce and sell the book. It is a long-term right that will benefit the business.
Supplies purchased for use within a one-year period.	Current Asset	Supplies are tangible assets, but they have a useful life of less than one year.
Vacant land purchased with the hope that it can be sold in a few years for a profit.	Long-term Investment	Land is a tangible asset, but cannot be called a fixed asset unless it is used in operations.
Insurance policies that will be in effect for 6 months.	Current Asset	This legal right to collect from the insurance company is an intangible benefit, but it expires within one year.
Vacant buildings and land that are no longer used and are currently for sale.	Current Asset	Since they are no longer used in operations, the buildings and land are not fixed assets. They will most likely be listed as investments, but they will not be classified as long-term if it is probable they will be sold in the near term.

II. Valuation of Long-Term Assets

- A. According to GAAP, the **valuation basis** for fixed assets (the value at which the asset is reported on the balance sheet) is **historical cost**. Therefore, the balances reported to us on a corporation's balance sheet have nothing to do with what the assets are actually worth today. They just represent un-depreciated original cost.
 1. You may be surprised to learn this, since most people assume that the assets that are listed on the balance sheet are carried at what they are worth. Remember, though, that the cost principle applies to fixed assets. This means that what we see on the balance sheet is

not the fair market value of the assets, but merely their original costs less the portion of the cost that has been depreciated away.

2. Why is the cost principle applied to fixed assets? Certainly, the original cost of a building that was purchased 20 years ago has no relevance for an investor or creditor today. These balance sheet users want to know what the building is worth today. Original cost is irrelevant to them.
 3. Accountants do try to provide relevant information to the financial statement users. But they also want to provide reliable information to them, and when it is possible to report information that is both relevant and reliable, they do.
 - a. For example, we learned that inventories are carried at the lower of cost or market value, and later on in Module 15 we will learn that investments are carried at their fair market values. We do this because it is possible to measure their market values reliably. We can look at the supplier's catalog or at a current stock quote and determine exactly what the fair market values for these assets are.
 - b. In the case of the building, there is no supplier's catalog or market quote to refer to. And if we hire two appraisers to give us an appraised value for the building, we will get two different values from them. Since it is not possible to measure the building's market value reliably, we choose to stay with the one value we are sure of – the original cost. We choose to sacrifice relevance in order to provide reliability.
- B. Since fixed assets are to be carried at "cost," it is important to know which expenditures can be considered a part of the asset's cost, and which cannot.
1. After all, buying buildings, land, and large equipment items is a complicated process. Legal fees, real estate commissions, remodeling, installation and a host of other costs are likely to be incurred.
 2. Therefore, decisions regarding which costs can be included as part of the fixed asset's *cost basis* (i.e., debited to the fixed asset account) can be quite involved. In general, though:

*Any cost that is **necessary in order to acquire a fixed asset and to place the asset in service** is recorded as part of the cost of the asset.*

- C. An expenditure that is included as part of the cost of the fixed asset is referred to as a **capital expenditure**. When we record a capital

expenditure in the fixed asset account, we are **capitalizing** the expenditure.

- D. Costs that are not *capitalized* are recorded as expenses of the period. These are referred to as **revenue expenditures**.

Consider this! The rules that determine the difference between *capital* and *revenue expenditures* are involved and rather complicated, and for a good reason. After all, revenue expenditures will appear in whole on the current period's income statement and will directly reduce net income. Capitalized costs will also appear on the income statement, but only in the form of depreciation expense as the asset is depreciated. Since depreciation expense is spread out over the useful life of the asset, it will not affect the current period's income statement very much at all. In fact, if the fixed asset in question is *land*, its capitalized costs will never appear on the income statement since land does not depreciate!

We encountered these same issues (and another set of complicated rules) when we discussed the *Inventory* account in Module 8. In that case, we noted that any cost that is assigned to the *Inventory* account does not appear in *Cost of Goods Sold* on the income statement. This means, as we learned in Module 8, that when inventories are large the way we value them has a big impact on both the balance sheet and the income statement.

Now we see the same issue arise regarding fixed assets. Any cost that is capitalized as part of the asset account balance does not appear on the income statement as a current period expense. These assets often have very large price tags, so what is done with the fixed asset account also has a big impact on both the balance sheet and the income statement. As a result, the rules regarding fixed assets, their valuation and their depreciation, are also quite complicated.

(Attention, Accounting Masochists! Remember what we say when we encounter complications? :)

- E. Four stages of acquisition are completed when fixed assets are purchased: the **preliminary stage** (the asset is only being considered), the **pre-acquisition stage** (the decision has been made to acquire the asset and negotiations and preparations for its receipt are under way), the **acquisition stage** (delivery occurs and the asset is placed in service), and the **in-service stage** (the asset is in place and is used in normal operations).

1. Costs incurred in the *pre-acquisition stage* and the *acquisition stage* are usually capitalized, since these costs will probably be necessary in order to acquire the asset. Cost incurred in the *preliminary* and the *in-service stages of acquisition* are usually treated as revenue expenditures. They will likely not be directly related to the acquisition of the asset and its placement in service.
2. Pre-acquisition and acquisition costs include shipping, installation, set-up, and trial runs. These are all costs that should be capitalized, since they are necessary in order to acquire the asset and begin using it. Once the asset is in place and functioning, the in-service costs (maintenance, tune-up, repairs, and so on) will be treated as revenue expenditures and **expensed** (recorded as expenses of the period).

Here's an example! This is a little lengthy, so bear with me...

Suppose the Crispy Snap Potato Chip Company analyzes its operations and determines that the replacement of older equipment with a new state-of-the-art machine will reduce production costs. The costs of the internal studies that allowed the company to arrive at this decision amounted to \$5,000. The purchasing agent reviewed the specifications required, and then selected a machine and supplier. The purchasing agent was flown to Munich to negotiate the purchase price of the machine and to oversee its construction (cost, \$7,000). The negotiated purchase price for the machine was \$300,000. Shipping and insurance costs paid by the company amounted to \$3,000. Prior to its arrival, a special foundation had to be built so that the machine could be used without cracking the floor (cost, \$10,000). Once the machine arrived, it was determined that the loading dock doors were not big enough, and a wall had to be knocked down in order to move the machine into the factory building. The cost of knocking down the wall, moving the machine inside, and rebuilding the wall amounted to \$50,000. During this process, a fork-lift driver fell asleep at the wheel and drove through the break-room wall, destroying furniture and several vending machines (cost, \$25,000). Once the machine was inside and on its foundation, a specialist from Munich had to be flown in to set the machine up. The cost of the specialist's trip and the materials used during set-up amounted to \$4,000. Once the machine was working, the cost of special lubricants used to keep it functioning smoothly amounted to \$500 per week. The company's maintenance personnel also had to monitor and adjust the machine as it was used, all at a cost of \$1,000 per week. The machine operators' wages amounted to \$5,000 per week.

How are each of these costs classified?

Cost	Classification	Explanation
Internal Studies - \$5,000	Revenue Expenditure – expense of the period	Preliminary stage cost – <u>not directly associated</u> with the purchase of this particular machine.
Purchasing agent - \$7,000	Capital Expenditure – record in asset account	Pre-acquisition stage costs, <u>necessary</u> to acquire the machine.

Price of machine - \$300,000	Capital Expenditure – record in asset account	Acquisition stage cost, <u>necessary</u> to acquire machine.
Shipping & insurance - \$3,000	Capital Expenditure – record in asset account	Acquisition stage cost, <u>necessary</u> to acquire machine.
Cost of foundation - \$10,000	Capital Expenditure – record in asset account	Acquisition stage cost, <u>necessary</u> to place machine in service (it can't be used without a foundation).
Remove/rebuild wall - \$50,000	Capital Expenditure – record in asset account	Acquisition stage cost, <u>necessary</u> to place machine in service (it has to be inside the building to be used).
Break room accident – \$25,000	Revenue Expenditure – expense of the period	<u>Not required</u> in order to place machine in service.
Set-up specialist - \$4,000	Capital Expenditure – record in asset account	Acquisition stage cost, <u>necessary</u> to place machine in service (has to be set up)
Lubricants - \$500	Revenue Expenditure – expense of the period	In-service stage cost. <u>Not required</u> in order to place machine in service. This is a cost of <u>using</u> the machine.
Maintenance wages - \$1,000	Revenue Expenditure – expense of the period	In-service stage cost. <u>Not required</u> in order to place machine in service. This is a cost of <u>using</u> the machine.
Worker's wages - \$5,000	Revenue Expenditure – expense of the period	In-service stage cost. <u>Not required</u> in order to place machine in service. This is a cost of <u>using</u> the machine.

- F. Let's make one final point about valuation. **Donated assets**, those that are gifted to the business, do not have a cost and so pose a bit of a problem. According to GAAP, donated assets should be valued at their *estimated market values* (by debiting the asset accounts for the estimated values), and revenue should be recorded (by crediting *Revenue from Donation* or a similar account).

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III. Depreciation of Property, Plant and Equipment Assets

- A. All fixed assets (except for *land*) lose their ability to provide future benefits over time. This is due to *physical deterioration*, or because of *obsolescence* and *inadequacy* (called *functional depreciation*). Land is the exception because it never wears out or becomes obsolete - it can always be used to hold up another building!
- B. An asset's loss of usefulness due to deterioration, obsolescence or inadequacy is reported as **depreciation expense**, and it is measured and recorded in each of the accounting periods that the asset is owned. We first discussed depreciation in Module 3. We will now examine the topic in much more detail.

1. The depreciation entry records a portion of the **cost basis** of an asset as expense. The asset's cost basis is simply the cost that has been capitalized and recorded in the asset account. It is the equal to the balance of the asset account.
2. Depreciation, though, is based upon the asset's **depreciable basis**, or *depreciation base*. This is the portion of the asset's cost that should be recorded as depreciation expense over the asset's useful life. Why not record all of the asset's cost as depreciation expense? Because not all of its cost will be lost during its useful life if the asset has a *salvage value*.

Salvage value (also called **residual value**) is the amount that the company estimates it will receive when the asset is sold or otherwise disposed of at the end of its useful life. If the asset really has been used up, it will probably be taken to the junk yard and scrapped. Junk yards are also called salvage yards, which is where the term "salvage value" comes from. This salvage value amount is the "residue" of value that is left from the asset's original cost; hence the term, "residual value."

Therefore, an asset's depreciable basis is equal to the asset's cost basis *minus* the asset's estimated **residual value**:

Depreciable Basis = Cost Basis – Residual Value (Salvage Value)

Consider this!

Why is the residual value subtracted from the asset's cost? Simply because the asset's entire cost will not be lost over its useful life. When the residual value is received, some of the cost is recouped.

For example, suppose a company buys a special-purpose machine at the beginning of the year so that it can produce a custom job for a customer. The machine costs \$100,000, but it can be sold for an estimated \$90,000 at the end of the year, after the job is finished. This \$90,000 represents the asset's residual value (or salvage value). How much depreciation expense should be reported for the machine in the current year?

The machine's \$100,000 cost is known, but we certainly do not want to report all of this amount as depreciation expense for the year. Clearly, the machine will only lose \$10,000 of value as it is used in operations, so the depreciation expense the company will incur during the year will only be \$10,000 (\$100,000 cost – 90,000 residual value). Our conclusion? Unless the residual value is estimated and included in our calculations, we will not be able to determine an appropriate amount of depreciation expense to report!

- C. The goal in recording depreciation expense is to match the expense that has been incurred in each period, due to depreciation, with the revenues that were earned from the use of the asset. This is all in keeping with the *Matching Principle*.
- D. Because one single method of calculating depreciation cannot be appropriate for every kind of business and every type of asset, there are many acceptable methods that may be used. Theoretically, the method chosen to calculate depreciation expense should be the one that best matches the recognition of the expense with the benefits (revenues) provided from the use of the asset.
1. We encountered this “flexibility” earlier, in our discussion of inventory valuation methods, where companies could choose between LIFO, FIFO, and Average Cost.
 2. As we noted in our discussion of inventory valuation methods, flexibility is needed in order to allow companies to choose the methods that are appropriate for their businesses and the assets involved. Therefore, flexibility allows companies to produce fair and undistorted financial statements. However, this flexibility also opens the door to manipulation and “window dressing” of the financial statements.
- E. Depreciation is recorded in an adjusting entry that is made at the end of each accounting period. In this entry, Depreciation Expense is recorded and the asset’s *carrying value* is reduced by crediting a contra-account, *Accumulated Depreciation*:

<i>Depreciation Expense</i>	<i>\$X</i>	
<i>Accumulated Depreciation</i>		<i>\$X</i>

Note: The “carrying value” is simply the value at which the asset is carried on the balance sheet. Carrying values and the reason for using the contra-account were explained previously in Module 3, and you may want to review Module 3 before continuing on below.

IV. Depreciation Methods

- A. One of the acceptable methods that may be used to determine depreciation expense is the ***straight-line method***.

1. The asset's depreciable basis (cost minus residual value) is divided by the number of years of expected useful life to arrive at an annual depreciation expense amount.

$$\text{Straight-Line Depreciation} = \frac{\text{Cost} - \text{Residual Value}}{\text{Years of Useful Life}}$$

2. The method produces an equal amount of expense recognition in each period over the asset's useful life.
3. It is simple to apply, but because many assets become less productive in the later years of their lives and produce less revenue, the method may mismatch revenues and expenses.

Straight-Line Depreciation Example:

Assume an asset is purchased for \$12,000 and has a 3-year useful life. It is estimated that the salvage value is \$3,000. The depreciation expense to be taken on the asset is:

$$\frac{\$12,000 \text{ Cost} - \$3,000 \text{ Salvage}}{3 \text{ years}} = \$3,000 \text{ per year}$$

<u>Year</u>	<u>Depreciation Expense</u>
1	\$ 3,000
2	\$ 3,000
3	\$ 3,000
<i>Total</i>	<i>\$ 9,000</i>

- B. The ***units-of-production method*** is an alternative depreciation method.
1. Cost (less residual value) is divided by the number of units of expected production during the useful life of the asset to arrive at a depreciation expense amount per unit of production. At the end of the year, this amount is multiplied by the number of units produced to determine the year's depreciation expense amount. A "unit of production" could be the actual unit produced using the asset, or another measure of usage such as miles, hours, cycles, customer orders processed, etc.

$$\text{Units of Production Depreciation Rate} = \frac{\text{Cost} - \text{Residual Value}}{\text{Total Units Produced}}$$

2. Under this method the amount of the *Depreciation Expense* reported varies from year to year, depending upon activity.

3. The method is theoretically sound in that it better matches expenses and revenues, but it can only be used when the expected production from the asset can be reasonably estimated.
4. While the method does a good job of matching expenses with revenues, it is not feasible for use with many assets. Why? Simply because many assets (buildings, furniture, or that stapler on your desk, for example) do not have odometers, counters, or other devices that measure usage.

Units of Production Depreciation Example:

An asset is purchased for \$12,000 and can be used for 36,000 machine cycles before it must be disposed of. It is estimated that the salvage value is \$3,000. The rate of depreciation and the depreciation expense to be taken on the asset is:

$$\frac{\$12,000 \text{ Cost} - \$3,000 \text{ Salvage}}{36,000 \text{ cycles}} = \$.25 \text{ per cycle}$$

<u>Year</u>	<u>Number of Cycles</u>	<u>Depreciation Expense</u>
1	16,000 x \$.25 =	\$ 4,000
2	12,000 x \$.25 =	\$ 3,000
3	<u>8,000</u> x \$.25 =	<u>\$ 2,000</u>
<i>Total</i>	36,000	\$ 9,000

- C. The ***declining balance method*** is another method that is acceptable under GAAP.
1. This is an ***accelerated depreciation*** method that produces more expense recognition in the early years of the asset's life than in the later years. It is appropriate for use with assets that do lose their productivity as they age, producing less revenue in the later years of their lives than in the early years.
 2. The ***Double-declining-balance*** method arrives at the annual depreciation expense by (1) doubling the straight-line rate of depreciation, and then (2) multiplying the book value of the asset by this doubled rate.

- a. The straight-line rate of depreciation is determined by the asset's useful life. Remember that under the straight-line method, the depreciable base is divided by the number of years of useful life. A 3-year useful life results in 1/3 of the asset's depreciable base being taken each year in depreciation expense, making the straight-line rate equal to 1/3. A 5-year useful life results in a 1/5 (20%) straight-line rate, a 10-year useful life results in a 1/10 (10%) straight-line rate, and so on.
- b. Once the straight-line rate is known, it is multiplied by 2 (doubled). This doubled rate is then multiplied by the asset's carrying value (cost minus accumulated depreciation) in order to calculate the depreciation expense amount.

Double Declining Balance :

Step 1 – Double the Straight-line Rate of Depreciation:

$$\frac{1}{\text{Years of Useful Life}} = \text{straight-line depreciation rate};$$

$$\text{Straight-line rate} \times 2 = \text{doubled straight-line rate}$$

Step 2 – Apply doubled straight-line rate to asset's carrying value:

$$\text{Cost} - \text{Accumulated Depreciation} = \text{Carrying Value}$$

$$\text{Carrying Value} \times \text{Doubled Straight-Line Rate} = \text{Depreciation Expense}$$

- c. Since the carrying value falls as the asset is depreciated, the "balance" at which the asset is reported on the balance sheet "declines" with the passage of time. This is why the method is called a **declining-balance** method. Let's look at an example, so that we can see how the year-by-year calculations are made.

Declining Balance Example (Part I):

Assume an asset is purchased for \$12,000 and has a 3-year useful life. It is estimated that the salvage value is \$3,000. How much depreciation expense should be taken on the asset in each year of its life?

Step I. Double the Straight-line Rate of Depreciation:

$$\frac{1}{3 \text{ years}} = 1/3 \text{ straight-line rate}; \quad 1/3 \times 2 = 2/3 \text{ doubled straight-line rate}$$

Step 2 – Apply doubled straight-line rate to asset’s carrying value:

<u>Year</u>	<u>Carrying Value at End of Year</u> <u>(Cost – Accumulated Depreciation)</u>	<u>Doubled St.-</u> <u>Line Rate</u>	<u>Depreciation</u> <u>Expense</u>
1	$(\$12,000 - 0) = \$12,000$	$x \frac{2}{3}$	\$ 8,000
2	$(\$12,000 - 8,000) = \$4,000$	$x \frac{2}{3}$	\$ 2,667
3	$(\$12,000 - 10,667) = \$1,333$	$x \frac{2}{3}$	\$ 889
Total			\$ 11,556

Note: Residual value is not considered in the declining-balance method’s calculations. As a result, a total of \$11,556 of depreciation expense is taken. However, because there is a \$3,000 residual value, only \$9,000 of depreciation expense can be taken. That means that we cannot use all the depreciation expense amounts we have calculated in the example above. We must modify our calculations!

- When the residual value is high, as it was in the example above, it is likely that the declining-balance method will produce more total depreciation expense through the life of the asset than can be taken. When the residual is low, it is likely that not enough depreciation expense will be derived. This problem is solved by switching to the straight-line method at some point in the asset’s life, as is illustrated below.

Declining Balance Example (Part II):

As was explained above, the declining balance method usually results in too much depreciation being taken on the asset when there is a large salvage value. This is the case here, where \$11,556 of depreciation has been calculated for depreciation and only \$9,000 can be taken.

The double-declining balance depreciation calculations from the example above are shown below. Note that \$8,000 of depreciation is taken in year 1, which is not a problem since it is less than the \$9,000 maximum amount that can be taken. The excess depreciation begins to occur in year 2, when \$2,667 of depreciation is calculated (see below). Since this would push us over the \$9,000 limit, we will have to stop after the first year and switch to the straight-line method for years 2 and 3.

<u>Year</u>	<u>Book Value</u> <u>(Cost – Accumulated Depreciation)</u>	<u>Doubled St.-</u> <u>Line Rate</u>	<u>Depreciation</u> <u>Expense</u>
1	$(\$12,000 - 0) = \$12,000$	$x \frac{2}{3}$	\$ 8,000
2	$(\$12,000 - 8,000) = \$4,000$	$x \frac{2}{3}$	\$ 2,667 ←
3	$(\$12,000 - 10,667) = \$1,333$	$x \frac{2}{3}$	\$ 889
Total			\$ 11,556

Excess depreciation begins to occur here (total taken at end of year 2 = 10,667, limit = 9,000).

Part II. Modifying the Initial Depreciation Schedule

Since the excess depreciation begins to occur in year 2, we will stop after the first year and switch to the straight-line method for years 2 and 3. Because \$8,000 of depreciation was taken in year 1, there is only \$4,000 of original cost left to depreciate (\$12,000 cost - \$8,000 depreciation in year 1). The \$3,000 residual must also be subtracted, leaving just \$1,000 of cost that can still be recorded as depreciation expense during years 2 and 3:

\$12,000 Cost - \$8,000 Depreciation - \$3,000 Residual = **\$500 per year**
2 years of remaining useful life

<u>Year</u>	<u>Book Value</u> (Cost – Accumulated Depreciation)	<u>Doubled St.-</u> <u>Line Rate</u>	<u>Depreciation</u> <u>Expense</u>
1	(\$12,000 – 0) = \$12,000	x 2/3	\$8,000
2	Switch to Straight-Line		\$ 500
3	Switch to Straight-Line		\$ 500
Total			<u>\$9,000</u>

Because of switch to straight-line, total depreciation expense taken = \$9,000.

Part III. What Happens When the Salvage Value is Small?

Note that the declining balance method also results in not enough depreciation being taken on the asset when there is a small salvage value. This would be the case if the salvage value in the example were only \$100. Applying the steps from the initial calculation results in \$11,556 of depreciation, but \$11,900 must be taken. Since the problem now begins to occur in year 3, we will stop after the second year and switch to the straight-line method for year 3:

\$12,000 Cost - \$10,667 Depreciation - \$100 Salvage = **\$1,233 per year**
1 year of remaining useful life

<u>Year</u>	<u>Book Value</u> (Cost – Accumulated Depreciation)	<u>Doubled St.-</u> <u>Line Rate</u>	<u>Depreciation</u> <u>Expense</u>
1	(\$12,000 – 0) = \$12,000	x 2/3	\$ 8,000
2	(\$12,000 – 8,000) = \$4,000	x 2/3	\$ 2,667
3	Switch to Straight-Line		\$ 1,233
Total			\$11,900



Click the link below to play a video presentation that “walks you through” the illustration above.

[Link to “Depreciation Method” Presentation](#)

D. MACRS (US Income Tax Depreciation, “Modified Cost Recovery System)

1. Used for income tax reporting only, *MACRS* is **not** acceptable for public reporting purposes (unless there is no material difference between the depreciation expense amounts calculated using it and those resulting from the generally accepted methods presented above). Even when the differences are immaterial, it may still be advisable to not use the method for public reporting since it tends to write down the company’s assets and reduce net income to a greater degree than other methods. This can unfavorably distort the company’s apparent profitability and liquidity as reflected in the financial statements.
2. To apply *MACRS* the taxpayer merely determines the *class* that the asset falls into (3-year, 5-year, 7-year property, etc.) and then finds the appropriate percentage from the *MACRS* table. This percent figure is multiplied by the original cost of the asset to determine the depreciation expense amount to report for tax purposes.

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V. Other Issues Regarding Property, Plant & Equipment Assets

A. Depreciation for Partial Periods. When an asset is acquired *during* the year, only a **partial year’s depreciation** should be taken on the asset at the end of the year. After all, if the asset is not used throughout the year, a full year’s depreciation expense should not be recorded. For example, an asset acquired on July 1 will be used for 6 months during the year, so only one half of a full year’s depreciation expense should be recognized on that year’s income statement.

1. You might think that the amount of depreciation expense recorded for an asset acquired during the year would be calculated in the same way that interest on a note is calculated. For example, if the interest on a note is \$1,800 per year, and the note is dated December 11, interest of \$100 ($\$1,800 \times 20/360$) would be reported on the annual income statement. However, unlike interest on a note, depreciation is not calculated from the precise date of acquisition. This is because, unlike interest on a note (which can be calculated with precision), depreciation expense is only an estimate. After all, the residual value and the years of useful life are both estimates, which makes the amount of calculated depreciation expense a very big estimate. It is not “worth” counting each day and

being extremely precise when the estimated depreciation amount is so uncertain.

2. So how do we calculate a partial year's depreciation amount? Under one of the allowable approaches, calculations may be made from the *nearest whole month of acquisition*. For example, an asset acquired on September 10 would be depreciated beginning on September 1, and 4/12 of a full year's expense amount would be recorded for the asset at the end of the year. An asset acquired on September 20 would be depreciated beginning on October 1, and 3/12 of a full year's depreciation would be reported.
3. In applying this procedure, simply calculate the first full year's depreciation expense. Then, going to the nearest whole month of acquisition, determine what fraction of the year the asset was actually in use. Multiply the first year's depreciation by this fraction, and record the result as the depreciation expense for the year. Continue on taking a full year's depreciation for each of the remaining years in which the asset is used.



Click the link below to play a video presentation that “walks you through” the illustration below.

[Link to “Partial Years” Presentation](#)

Partial Year Depreciation Example:

The following schedules present the depreciation expense that would be recorded in each of the examples given above had the asset been acquired on September 23 of Year 1. If the company follows the practice of assuming the purchase date is the first day of the nearest month, then the assumed purchase date is October 1, and the asset will have been used for 3 months during Year 1 (October through December). It will then be used throughout all of Year 2 and Year 3, and will continue to be used until the end of September in Year 4 (9 months). Depreciation expense will now be:

I. Straight-Line Method

$$\frac{\$12,000 \text{ Cost} - \$3,000 \text{ Salvage}}{3 \text{ years}} = \$3,000 \text{ per year}$$

<u>Year</u>	<u>Annual Depreciation</u>	<u>Partial Year Adjustment</u>	<u>Depreciation Expense</u>
1	\$ 3,000	$x \frac{3}{12} =$	\$ 750
2	\$ 3,000		\$ 3,000
3	\$ 3,000		\$ 3,000
4	\$ 3,000	$x \frac{9}{12} =$	\$ 2,250
Total			\$ 9,000

II. Units of Production Method

Note that this method is not time-dependent. That is, since only the number of units produced are used to determine the depreciation expense, the amounts do not change when the asset's assumed purchase date changes. Only changes in the number of units produced by the asset would cause changes in the depreciation expense amounts.

III. Declining Balance Method

<u>Year</u>	<u>Book Value</u>		<u>Annual Depreciation</u>	<u>Partial Year</u>	<u>Depreciation Expense</u>
1	$(\$12,000 - 0) = \$12,000$	$x 2/3$	\$ 8,000	$x 3/12$	\$ 2,000
2	$(\$12,000 - 2,000) = \$10,000$	$x 2/3$			\$ 6,667

It will now be necessary to switch to straight-line depreciation to determine the depreciation expense for the remaining 1.75 years of remaining useful life (all of year 3 and the first 9 months of year 4):

$$\frac{\$12,000 \text{ Cost} - \$8,667 \text{ Accum. Depr.} - \$3,000 \text{ Salvage}}{1.75 \text{ years}} = \$190 \text{ per year}$$

3	Switch to Straight-Line		\$ 190	$x 12/12$	\$ 190
4	Switch to Straight-Line		\$ 190	$x 9/12$	\$ 143
Total					\$ 9,000

B. **Revision of Depreciation Amounts** may become necessary if the useful life and/or residual value estimates change during the asset's life.

- Each year, before making adjusting entries to recognize depreciation expense, the estimates for useful life and residual value should be reviewed. If *material* changes (those that are "big enough to matter") in the estimates have occurred, the depreciation expense should be recalculated (*revised*) and the new amount should be reported for the current year.
- Note that there is no attempt to revise the previous periods' financial statements. Changes in estimates affect only the amount reported for depreciation expense in the current period.
- Once the estimates have been revised, the remaining book value of the asset (original cost minus the current balance in *Accumulated*

Depreciation), less the new residual value estimate, is depreciated over the remaining years of useful life.

Here's an Example:

Suppose that a \$10,000 asset is being depreciated under the straight-line method with an estimated useful life of 9 years and \$1,000 of residual value. The depreciation calculated for the asset is:

$$\frac{\$10,000 \text{ Cost} - \$1,000 \text{ Salvage}}{9 \text{ years of useful life}} = \$1,000 \text{ per year}$$

Suppose that after recording depreciation for 3 full years, the useful life estimate is changed to 13 years, and the residual value estimate is changed to \$3,000. Since depreciation has been recorded for 3 full years, the balance in Accumulated Depreciation is \$3,000. Also, since 3 years have passed, the asset is now assumed to have 10 years of useful life remaining (13 years – 3 years).

To calculate the revised depreciation amount for year 4, we subtract the accumulated depreciation from the original cost to determine the remaining book value of the asset; we subtract the new residual value estimate of \$3,000; and we divide the result by the 10 remaining years of useful life:

$$\frac{\$10,000 \text{ Cost} - \$3,000 \text{ Depreciation} - \$3,000 \text{ Salvage}}{10 \text{ years of remaining useful life}} = \$400 \text{ per year}$$

Since there is a material difference between the former depreciation expense amount of \$1,000 and the revised \$400 figure, we would use the new \$400 amount for year 4 and the years that follow – unless the estimates are revised again in a later year!

- C. **Composite-Rate Depreciation** may be applied to a pool of several similar assets in order to consolidate and simplify accounting for them.
- D. **Capital Expenditures After Acquisition (Fixed Asset Components)**
1. The **addition of a component** to an asset that is presently in service is a capital expenditure. It can be thought of as an “enlargement” (something was added to the asset that was not there before, such as a new wing that is added to a building). This is recorded by debiting the asset account. If the effect is material, it will then be necessary to revise the depreciation rates.
 2. The **replacement of a component** is an “improvement” (the asset is better off and will be more productive or will have an extended useful life, but it is not “enlarged”). Nothing is *added* to

the asset. Instead, the original component is removed and replaced with a new one. This is recorded by first debiting Depreciation Expense and crediting Accumulated Depreciation for the remaining book value of the component. Next, Accumulated Depreciation is debited and the asset account is credited for the original cost of the component. Lastly, the asset account is debited and Cash or a Payable account is credited for the cost of the new component. It will then be necessary to revise the depreciation rates.

- Note that *ordinary repairs* do not affect the life or residual value of the asset. These are revenue expenditures, recorded by debiting an expense account.

Here's an example!	
A wing is added on to a building at a cost of \$1,000,000. Since this is an "enlargement," the building account will be debited and cash or other accounts will be credited:	
<i>Building</i>	<i>1,000,000</i>
<i>Cash, Accounts Payable, etc.</i>	<i>1,000,000</i>
A building's roof is removed and replaced with a new \$200,000 metal roof that will have a longer useful life and will support a helicopter landing pad. It is estimated that the cost of the original roof is \$100,000, and that the roof had been depreciated by \$70,000. This is an "improvement," and we will have to fully depreciate the old roof, remove it from the asset account, and then add the cost of the new roof to it:	
(1) <i>Depreciation Expense</i>	<i>30,000</i>
<i>Accumulated Depreciation</i>	<i>30,000</i>
(2) <i>Accumulated Depreciation</i>	<i>100,000</i>
<i>Building</i>	<i>100,000</i>
(3) <i>Building</i>	<i>200,000</i>
<i>Cash, Accounts Payable, etc.</i>	<i>200,000</i>
A building is given a new coat of paint, since the old paint had begun to peel. The cost was \$10,000. This is not a capital expenditure, but rather ordinary and routine maintenance. We will record the expenditure as a revenue expenditure (expense of the period):	
<i>Maintenance Expense</i>	<i>10,000</i>
<i>Cash, Accounts Payable, etc.</i>	<i>10,000</i>

- Leased Assets** are accounted for in one of two ways. When a long-term lease is signed that gives the company the right to use an asset through a large portion of its useful life (and also obligates the company to make lease payments for a long period of time), the difference between owning the asset (and having to finance it) and leasing it (making lease payments)

is not very great. It is, in effect, the same thing. In these cases, *the company must report the leased asset on its balance sheet as if it were owned, and it must report the lease obligation among its liabilities.* This is referred to as a **capital lease**. This is not done when the lease period is short and there is a substantial difference between owning the asset and leasing it. In these cases, the asset is not listed on the balance sheet and a lease obligation is not reported among the liabilities. The lease payments are simply recorded as expense when they are made. This is referred to as an **operating lease**.

- F. The **Ratio of Fixed Assets to Long-Term Debt** is a measure of the long-term solvency of the company. The more the company has in plant assets relative to the debts that were incurred to finance them, the smaller the risk of future bankruptcy.

$$\text{Fixed Assets to Long-Term Debt} = \frac{\text{Total Fixed Assets}}{\text{Total Long-term Liabilities}}$$

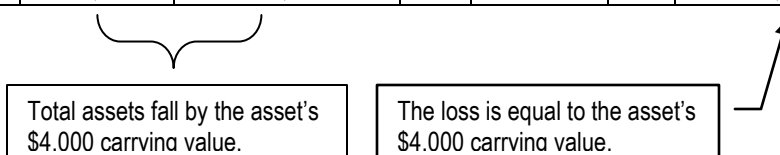
VI. Disposal of Assets

- A. When an asset is disposed of, the balance in the asset account and the balance in *Accumulated Depreciation* are removed from the accounts (the asset account is credited and *Accumulated Depreciation* is debited). When this happens, the asset's *carrying value* (original cost less *Accumulated Depreciation*) is written off the books.
1. Remember that the cost principle applies to fixed assets. This means that what we see on the balance sheet is not the fair market value of the assets, but merely their original costs less the portion of the cost that has been depreciated away. The amount the asset is actually worth, its **fair market value**, is likely to be different from its carrying value.
 2. It is upon the disposal of an asset that the asset's fair market value will be known with certainty. It will be equal to the amount of cash or other assets that are received when the old asset is disposed of. Therefore, it is upon disposal that the difference between the asset's book value and its fair market value will be recognized in the accounts. This difference will be reported as a gain or a loss on the income statement.
 3. There is, though, one instance in which an asset might be written down prior to its disposal. A fixed asset might become **impaired** due to faster-than-expected obsolescence, wear, or other factors. If this loss of value is deemed to be material, the asset might be written down to a lower carrying value with a *loss due to impairment* reported on the income statement.

- B. **Accidental loss or discarded assets.** If nothing is received in exchange for the asset upon disposal (it may have been accidentally lost or merely junked), the asset and its accumulated depreciation are removed from the accounts and a loss is recognized. The loss is equal to the carrying value of the asset.

Here's an example! Suppose equipment with an original cost of \$10,000 and accumulated depreciation of \$6,000 is discarded. If we analyze this transaction using the accounting equation, we see the following.

	Assets			=	Liabilities	+	Equity
	Cash	Equipment	Accumulated Depreciation	=	Accounts Payable	+	Capital (or Ret. Earn.)
Balances	10,000	10,000	-6,000	=	0	+	14,000
Transaction	+ 0	- 10,000	+6,000	=	+ 0	+	-4,000



Since the asset and the accumulated depreciation account balances are both removed from the accounts, the reduction in total assets and the amount of the loss equal the asset's \$4,000 carrying value. The journal entry to record the disposal is:

Loss	4,000
Accumulated Depreciation	6,000
Equipment	10,000

- C. **Sale of a used asset.** If cash is received from the sale of an asset, a gain or loss equal to the difference between the carrying value and the cash received is recognized. Note that the cash received from the sale of the asset should be equal to its fair market value. *This means that gains and losses from the sale of an asset are equal to the difference between the asset's carrying value and the asset's fair market value.*

Here's an example! (1) Suppose equipment with an original cost of \$10,000 and accumulated depreciation of \$6,000 is sold for \$2,000. If we analyze this transaction using the accounting equation, we see that a loss

of \$2,000 will be recorded. This is equal to the difference between what the asset is actually worth (the \$2,000) and its carrying value (\$4,000):

	Assets			=	Liabilities	+	Equity
	Cash	Equipment	Accumulated Depreciation	=	Accounts Payable	+	Capital (or Ret. Earn.)
Balances	10,000	10,000	-6,000	=	0	+	14,000
Transaction	+ 2,000	- 10,000	+6,000	=	+ 0	+	-2,000

Total assets fall by \$2,000 (the asset's \$4,000 carrying value less \$2,000 cash received).

The loss is equal to \$2,000 (the asset's \$4,000 carrying value - \$2,000 cash received).

(2) Let's now say that the equipment is sold for \$6,000. If we analyze this transaction using the accounting equation, we see that a gain of \$2,000 will now be recorded. This is again equal to the difference between what the asset is actually worth (\$6,000) and its carrying value (\$4,000):

	Assets			=	Liabilities	+	Equity
	Cash	Equipment	Accumulated Depreciation	=	Accounts Payable	+	Capital (or Ret. Earn.)
Balances	10,000	10,000	-6,000	=	0	+	14,000
Transaction	+ 6,000	- 10,000	+6,000	=	+ 0	+	+2,000

Total assets increase by \$2,000 (the \$6,000 of cash received minus the asset's \$4,000 carrying value).

The gain is equal to \$2,000 (the \$6,000 cash received less the asset's \$4,000 carrying value).

The journal entries to record these two sales are:

(1)	Cash	2,000	
	Loss on Sale of Equipment	2,000	
	Accumulated Depreciation	6,000	
	Equipment		10,000
(2)	Cash	2,000	
	Accumulated Depreciation	6,000	
	Gain on Sale of Equipment		2,000
	Equipment		10,000

- D. **Exchanges (Trade-Ins).** Instead of selling an asset for cash, an older asset may be traded in on a new asset. For example, you might decide to trade in your old automobile for a new one, giving up your old car along with some cash in order to obtain a new one. This is referred to as a *trade-in*, or an *exchange transaction*.
1. The rules regarding exchanges of assets are very complicated, and we will only scratch the surface here. *In general*, when an exchange of assets occurs, gains and losses are recognized.
 2. The new asset is valued at its *fair market value*. The old asset, along with its accumulated depreciation, is removed from the accounts, and the cash payment is recorded.
 3. A gain or a loss on the exchange (again equal to the difference between the carrying value of the old asset and its fair market value) is recognized in the entry:

<u>Exchange with Gain:</u>		<u>Exchange with Loss:</u>	
<i>Asset_{new}</i>	<i>\$X</i>	<i>Asset_{new}</i>	<i>\$X</i>
<i>Accumulated Depreciation</i>	<i>\$X</i>	<i>Accumulated Depreciation</i>	<i>\$X</i>
<i>Gain on Exchange</i>	<i>\$X</i>	<i>Loss on Exchange</i>	<i>\$X</i>
<i>Asset_{old}</i>	<i>\$X</i>	<i>Asset_{old}</i>	<i>\$X</i>
<i>Cash</i>	<i>\$X</i>	<i>Cash</i>	<i>\$X</i>

Here's an example! (1) Suppose equipment with an original cost of \$10,000 and accumulated depreciation of \$6,000 is exchanged for a new asset with a fair market value of \$11,000. The equipment dealer gave the company a trade-in allowance of \$2,000 for the old equipment, and the company paid the remaining \$9,000 in cash.

The \$2,000 trade-in allowance is the amount that the dealer is willing to “give” the company for the asset that is being traded in. Logically, the company will not accept the offer if it believes the old asset is worth more than \$2,000. Likewise, the dealer will not extend the offer unless he or she thinks the old asset is worth less. Therefore, if the offer is accepted, the old asset must actually be worth the \$2,000 trade-in allowance, and we can conclude that \$2,000 is its fair market value. Since the old asset's carrying value is \$4,000, there will be a loss of \$2,000 to record (the difference the carrying value and the fair market value).

Let's analyze this transaction using the accounting equation. Remember that the new asset is to be recorded at its fair market value (\$11,000), and that \$9,000 of cash must be paid to the dealer.

	Assets			=	Liabilities	+	Equity
	Cash	Equipment	Accumulated Depreciation	=	Accounts Payable	+	Capital (or Ret. Earn.)
Balances	10,000	10,000	-6,000	=	0	+	14,000
Transaction		+11,000					
	- 9,000	- 10,000	+6,000	=	+ 0	+	-2,000

Total assets fall by \$2,000 (the asset's \$4,000 carrying value plus \$9,000 cash paid less \$11,000 of new equipment).

The loss is equal to \$2,000 (the asset's \$4,000 carrying value – \$2,000 fair market value).

(2) Let's now say that the trade-in allowance for the old equipment is \$6,000. This means that only \$5,000 must now be paid in cash to the dealer. If we analyze this transaction using the accounting equation, we see that a gain of \$2,000 will now be recorded. This is again equal to the difference between the old asset's fair market value (\$6,000) and its carrying value (\$4,000):

	Assets			=	Liabilities	+	Equity
	Cash	Equipment	Accumulated Depreciation	=	Accounts Payable	+	Capital (or Ret. Earn.)
Balances	10,000	10,000	- 6,000	=	0	+	14,000
Transaction		+ 11,000					
	- 5,000	- 10,000	+6,000	=	+ 0	+	+2,000

Total assets increase by \$2,000 (the \$6,000 of cash received minus the asset's \$4,000 carrying value).

The gain is equal to \$2,000 (the \$6,000 cash received less the asset's \$4,000 carrying value).

The journal entries to record these two exchange transactions are:

(1)	<i>New Equipment</i>	<i>11,000</i>
	<i>Loss on Sale of Equipment</i>	<i>2,000</i>
	<i>Accumulated Depreciation</i>	<i>6,000</i>
	<i>Equipment</i>	<i>10,000</i>
	<i>Cash</i>	<i>9,000</i>

(2) New Equipment	11,000
Accumulated Depreciation	6,000
Gain on Sale of Equipment	2,000
Equipment	10,000
Cash	5,000

E. As we said above, gains and losses from asset exchanges are, in general, fully recognized for public reporting purposes. However, *special rules apply to recognition of gains and losses from exchanges when one or more of the following three conditions exist:*

- the fair values of the assets cannot be determined.
 - the exchange is part of a sales transaction (this occurs when inventory is exchanged for inventory that will be sold to customers in the same line of business).
 - the exchange does NOT have **commercial substance**. An exchange has *commercial substance* when the company, as a result of the exchange, has significantly altered its economic position. This usually means that its future cash inflows are substantially improved as a result of the exchange.
1. When one or more of these conditions exist, *gains from the exchange of **similar assets** are **not** recorded. Losses **are** recorded, but only if the old asset is determined to have been **impaired**.*
 2. When a gain is not recorded, the cost basis of the new asset is adjusted. In essence, the gain that is not recorded is subtracted from the fair market value of the new asset, and the result becomes the asset's cost basis. When a loss is not recognized, the amount of the loss is added to the new asset's cost basis:

<u>Exchange with Unrecognized Gain:</u>		<u>Exchange with Unrecognized Loss:</u>	
Asset_{new} (FMV – Gain)	\$X	Asset_{new} (FMV + Loss)	\$X
Accumulated Depreciation	\$X	Accumulated Depreciation	\$X
Asset_{told}	\$X	Asset_{told}	\$X
Cash	\$X	Cash	\$X

<i>Exchange with Impairment Loss:</i>	
<i>Asset_{new}</i> (at fair market value)	<i>\$X</i>
<i>Accumulated Depreciation</i>	<i>\$X</i>
<i>Loss from Impairment</i>	<i>\$X</i>
<i>Asset_{old}</i>	<i>\$X</i>
<i>Cash</i>	<i>\$X</i>

VII. Natural Resources and Intangible Assets

- A. ***Natural Resources*** are tangible assets (often land assets) that are acquired in order to obtain the resources they contain (oil, timber, ore, and so on). They are usually listed among the fixed assets on the balance sheet (that is, under the Property, Plant and Equipment heading).
- Like Property, Plant and Equipment assets, *natural resources* and *intangible assets* are recorded at cost.
 - As the resources are removed from the land, the natural resource becomes depleted and ***Depletion Expense*** is recorded using a units-of-production approach. Cost is divided by the units (tons, barrels, board feet, etc.) of expected production from the natural resource to determine a depletion rate. This is then multiplied by the number of units produced *and sold* to determine depletion expense:

<i>Depletion Expense</i>	<i>\$X</i>
<i>Accumulated Depletion</i>	<i>\$X</i>

- Accumulated Depletion*** is a contra-account to the natural resource asset account.

Here's an example!

Treemont Lumber Company purchases a tract of timberland for \$500,000. It is estimated that 2,000,000 board feet of lumber can be produced from the timber that is standing on the land. Afterwards, the land will be sold for an estimated \$100,000. During the first year of operations, 50,000 board feet of lumber was produced, of which 40,000 board feet was sold to the company's customers.

Under the units of production approach, the depletion rate will be \$.20 per board foot:

$$\text{Depletion Rate} = \frac{\$500,000 - \$100,000}{2,000,000 \text{ board feet}} = \$.20 \text{ per board foot}$$

Depletion expense for year = 40,000 x \$.20 = \$8,000.

Note that depletion is based upon the number of board feet sold, and not the number of board feet produced. This is in keeping with the Matching Principle. The remaining 10,000 board feet of production will also be valued at \$.20 per board foot, but this cost will represent the cost of the unsold inventory at the end of the year. It will be reported as a current asset on the balance sheet the current year, and it will become depletion expense in the following year when the production is sold.

- B. **Intangible assets** are recorded at cost and then **amortized** over time. Amortization is similar to depreciation or depletion, except that no “Accumulated Amortization” contra-account is normally used. The asset account is directly credited instead.
1. **Amortization Expense** for intangible assets is recorded using the straight-line method over their expected useful lives. This may be equal to their legal lives, but useful life is often much shorter than the legal life.
 2. The entry is:

Amortization Expense	\$X
Intangible Asset	\$X

2. **Examples of Intangible Assets:**
 - **Patents** (maximum legal life = 20 years)
 - **Copyrights** (maximum legal life = 70 years + life of author, but often amortized over two to four years)
 - **Trademarks** (are registered for a 10-year period, but they are NOT amortized since they can be renewed every 10 years, indefinitely.)
 - **Goodwill** (recorded only at time of purchase, goodwill is NOT amortized)

Here’s an example!

Grabmore Publishing Company purchases a copyright from another publisher that gives Grabmore exclusive rights to publish a popular accounting textbook. The cost of the copyright is \$800,000, and it is thought that the book will have a useful life of 10 years. The author is still living, so the copyright has at least 70

years of legal life remaining.

Under the straight-line approach, the amortization expense will be \$80,000 per year:

$$\text{Amortization Expense} = \frac{\$800,000 - \$0}{10 \text{ years}} = \$80,000 \text{ per year}$$

Note that amortization is based upon the copyright's estimated useful life, and not the legal life.

3. Note that it is the purchase cost of the intangible asset that is capitalized in the intangible asset account. **Research and development costs** may lead to the creation of a valuable asset that will be patented or copyrighted, but these costs are only rarely capitalized. Unless it is known that a benefit will be produced from these efforts, research and developments costs are expensed as incurred rather than being capitalized as part of the cost of an intangible asset. This is in keeping with the accounting principle of *conservatism*.

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