Chapter 10

What is a Current Liability?

Liabilities are classified as current or long-term. Current liabilities are present obligations that are expected to be satisfied within one year or within the normal operating cycle, whichever is longer. Long-term liabilities are expected to be satisfied beyond that period. Current liabilities are expected to be satisfied with current assets or through the incurrence of another current liability.

Types of Current Liabilities

Short-Term Notes Payable

Short-term notes payable are current obligations evidenced by promissory notes that are due within one year of the date of the balance sheet. Promissory notes usually require the payment of interest. Interest can be stated separately or included in the face amount. In the latter case, the actual amount borrowed is less than the face amount.

The journal entry to record issuing promissory note in exchange for cash is as follows:

D. Cash $5,000
   Cr. Notes Payable $5,000

The journal entry to record issuing promissory note to replace Account Payable is as follows:

D. Account Payable $5,000
   Cr. Notes Payable $5,000

The journal entry to record payment of note with interest stated separately is as follows:

D. Notes Payable $5,000
   Interest Expense 500
   Cr. Cash $5,500

The journal entry to record accrued interest expense on note with interest stated separately at the end of the fiscal year (with no actual payment of the interest) is as follows:

D. Interest Expense $250
   Cr. Interest Payable $250
The journal entry to record payment of note with interest stated separately at its maturity when some of the interest has been accrued in the previous year is as follows:

D. Notes Payable $5,000
   Interest Expense 250
   Interest Payable 250
Cr. Cash $5,500

**Discounted Promisory Notes (Not In Book)**

Sometimes Promisory Notes are issued without interest payments being specified. In order to get interest, the payee requires that the face amount of the note includes the principal owed plus the interest amount. In other words, if you give someone $100, and then sign a note promising to pay you $110 (no interest specified). You are really paying 10% interest. The fact that you got less than the face amount is called a discount. The journal entry for the issuance of such a note would be as follows:

D. Cash $100
   Discount on Note Payable 10
Cr. Notes Payable $110

When the interest has accrued:

D. Interest Expense $10
Cr. Discount on Note Payable $10

Some people debit Interest Expense immediately rather than Discount on Note Payable. You really shouldn't debit the interest account until the interest has accrued. Under this approach you would make the following journal entry when the note is issued:

D. Cash $100
   Interest Expense 10
Cr. Notes Payable $110

When the promissory note is paid, you would make the following journal entry:

D. Notes Payable $110
Cr. Cash $110

**Sales Taxes Payable**

Most states and many cities levy a sales tax on retail transactions, and the federal government also charges an excise tax on some products. The merchant
must collect the taxes from the customer at the time of the sale and record the receipt of cash and the proper tax liabilities. The merchant is not paying the tax. The merchant is the collection agent for the government. The merchant is collecting the tax from the customer on behalf of the government. Thus, the sales taxes are not an expense of the merchant.

The journal entry for the sale (including the collection of the sales tax is as follows):

D. Cash $109  
   Cr. Sales $100
   Sales Taxes Payable 9

It might be easier for you to understand this journal entry if you divide it into its two parts. First, there is the actual sale:

D. Cash $100  
   Cr. Sales $100

Second, there is the collection of the sales tax, which is a receipt of cash that must be handed over to the government. So, the collection increase’s the merchant’s cash, but also creates a liability to the government:

D. Cash $9  
   Cr. Sales Taxes Payable $9

**Payroll and Payroll Taxes**

Payroll liabilities consist of the labor-related obligations incurred by a business. They relate to two distinct functions:

- **Employer’s Expenses.** Not only is the business responsible for paying wages, paid at an hourly rate, and salaries, paid at a monthly or yearly rate, earned by its employees, it is obligated for such items as Social Security taxes, Medicare tax, and unemployment taxes. These are all expenses of the employer and are referred to as payroll tax expense.

- **Employee’s Payments.** In addition to the employer’s payroll tax expense, employees are required to contribute a portion their wages for various government and private programs. The employer is again acting as a collection agent in withholding from its employees amounts that must be remitted to governments, other agencies and companies. These amounts are not expenses of the employer. Instead they are taken out of funds that belong to the employees (the employee’s wages).
First, let’s focus on the employers acting as a collection agent for the collection of amounts owed by its employees for various purposes. You are collecting these amounts out of the employees’ salaries, so this journal entry also reflects the employer’s salary expense. Look at the various component parts:

If we pay a worker $500, we have an expense payment:

D. Salary & Wage Expense $500
   Cr. Salary Payable $500

The worker then says don’t pay me $15 that you owe me. Instead, give the $15 to the government for social security. (This is FICA.) Our liability to the employee goes down by $10 and the employer has an obligation to pay $10 to the government:

D. Salary Payable $15
   Cr. Social Security Taxes (FICA) Payable $15

If you net the two journal entries together:

D. Salary & Wage Expense $500
   Cr. Salary Payable $485
   Social Security Taxes (FICA) Payable 15

Thus, you can see that the salary expense is debited for the full amount owed to the employee. You then credit all of the amounts that you collected from the employee for the employee’s contributions to various programs. You also credit the salary payable for amount that you have to actual pay to the employee (the take home pay):

D. Salary & Wage Expense (gross amount) $500
   Cr. Salary Payable $350
   Employees’ Federal Income Taxes Payable 50
   Employees’ State Income Taxes Payable 5
   Social Security Taxes (FICA) Payable 15
   Medicare Taxes Payable 5
   Medical Insurance Payable 50
   Pension Contributions Payable 10
   Charitable Contribution 15

Now we have to pay the employer’s payroll tax expense. These are not the amounts owed by the employee that we withhold from their salaries. These amounts are the taxes owed by the employer. So there is purely the debit to the payroll tax expense (not salary expense), and the credits for the amount of taxes owed by the employer.
The journal entry for the payroll tax expense is as follows:

D. Payroll Tax Expense (gross amount)  $90
   Cr. Unemployment Insurance Payable $10
       Social Security Taxes (FICA) Payable 15
       Medicare Taxes Payable 5
       Medical Insurance Payable 50
       Pension Contributions Payable 10

**Unearned Revenues**

Unearned or Deferred Revenues represent obligations to deliver goods or services in return for advance payment. When delivery takes place, Deferred Revenue is debited and a revenue account is credited.

When the advance payment is received, the following journal entry is made:

D. Cash $15
   Cr. Unearned Subscriptions $15

When the service or product is delivered to the customer, the following journal entry is made:

D. Unearned Subscriptions $15
   Cr. Subscription Revenues $15

**Current Maturities of Long-Term Debt**

If a portion of long-term debt is due within the next year and is to be paid from current assets, then the current portion of long-term debt is classified as a current liability. The remaining debt is classified as a long-term liability.

**Contingent Liabilities**

A contingent liability is a potential liability that may, or may not, become an actual liability. They include:

- pending lawsuits,
- tax disputes,
- discounted notes receivable,
- the guarantee of indebtedness of others, and
- failure to comply with government regulations

The occurrence or nonoccurrence of a future event resolves the uncertainty regarding its outcome.
The two criteria for recording a contingent liability in the accounts are that:

- occurrence of a liability is probable, and
- the amount can be reasonably estimated.

If a contingent liability is probable, but cannot be reasonably estimated, then it cannot appear on the financial statements, but it should be disclosed in the notes to the financial statement.

**Other Current Liabilities (Not In Book)**

**Warranty Expense**

A manufacturer must estimate its liability for warranties relating to sales made during the current year and record it as an expense. This is an estimated expense like uncollectible account expense. We do it in order to match the expense with the revenue that it helps to generate. The warranty expense and liability must be recorded in the period of the sale regardless of when the company makes good on its warranties. Therefore, at the end of each accounting period, the company should estimate the future warranty expense that applies to the present period’s sales.

To record estimated product warranty expense:

D. Product Warranty Expense $15  
   Cr. Estimated Product Warranty Liability $15

To replace a part under warranty:

D. Estimated Product Warranty Liability $15  
   Cr. Merchandise Inventory $15

**Vacation Pay**

In most companies, employees earn vacation pay for working a certain length of time. Therefore, the company must estimate the vacation pay applicable to each payroll period, debit Vacation Pay Expense, and credit Estimated Liability for Vacation Pay.

When vacation pay is accrued, you make the following journal entry:

D. Vacation Pay $15  
   Cr. Estimated Liability for Vacation Pay $15
When the employee is paid while on vacation, you make the following journal entry:

D. Estimated Liability for Vacation Pay $500
   Cr. Cash (or Wages Payable) $500

Pensions

A pension plan is a program whereby a company agrees to pay benefits to its employees after they retire. Benefits to retirees are usually paid out of a pension fund. Pension plans are classified as defined contribution plans and defined benefit plans.

With a defined contribution plan, the plan specifies (defines) the contribution that the employer is to make to the plan on behalf of the employee. After the contribution is made, the employer has no further obligation to the employee. If the plan's assets increase in value, then the employee will receive a larger amount upon his or her retirement. If the plan's assets decrease in value, then the employee will receive a smaller amount upon his or her retirement.

When the contribution is made into the pension plan, an expense is debited:

D. Pension Expense $15
   Cr. Cash $15

With a defined benefit plan, the plan specifies the amount that the plan will give the employee upon his or her retirement. The employer still makes annual contributions to the plan on behalf of the employee, but if the plan's assets decrease in value, the employer must make up the short fall. Similarly, the employer (not the employee) benefits if the plan's assets increase in value. The liability owed or asset owned by reason of a defined benefit plan is a long-term liability/asset unless it will be paid or collected within the current year. In that case it is a current asset/liability.

Post Retirement Benefits Other than Pensions

Other post-retirement benefits, such as for health care, should be estimated and accrued while the employee is still working (in accordance with the matching rule). They are treated in a manner similar to Vacation Pay.

Accounts Payable

These are current obligations due to suppliers of goods and services.
Accrued Liabilities

An accrued liability is an actual or estimated liability that exists at the balance sheet date but is unrecorded. An end-of-period adjustment is needed to record both expenses and accrued liabilities.

Income Taxes

A corporation’s income tax expense is dependent on its net income, but its actual taxes payable is based upon its taxable income as computed on the corporation's tax return. These are rarely the same figures. This difference is caused by the fact that financial reporting income is governed by generally accepted accounting principles, whereas taxable income is governed by the Internal Revenue Code. The difference between the two is placed in Deferred Taxes. Deferred Taxes says that there is a timing difference between the taxes owed on the income statement and the taxes owed on the tax return. It can be an asset or liability. It can be short-term or long-term.

If there is no difference between tax expense on the income tax return and on the tax return:

D. Income Tax Expense $1,500
    Cr. Income Tax Payable $1,500

If there is a difference between the tax return and income statement:

D. Income Tax Expense $15
    Deferred Taxes (asset or liability as needed)
    Cr. Income Tax Payable $15

Bank Lines of Credit and Commercial Paper

Companies often obtain a line of credit at the bank to finance operations. The company may borrow a varying amount over time, subject to a ceiling, depending upon the needs of the company. In addition, a company may borrow short-term funds by issuing commercial paper (unsecured short-term notes sold to the public.

Dividends Payable

Dividends payable represent an obligation to distribute a corporation's earnings to its stockholders. This arises only when the board of directors declares a dividend.
Property Taxes

Property taxes are taxes levied on real and personal property. Very often a company's accounting period ends before property taxes are assessed. Therefore, it must make an estimate and debit Property Taxes Expense and credit Estimated Property Taxes Payable.

\[
\begin{align*}
\text{D. Property Taxes Expense} & \quad \$1,500 \\
\text{Cr. Estimated Property Taxes Payable} & \quad \$1,500
\end{align*}
\]

Long-Term Liabilities – Bonds

Corporations frequently issue long-term bonds or notes to obtain funds. Bonds are publicly traded debts of corporations, universities and government entities. The fact that they are publicly traded is very important to investors because it provides the investors with liquidity. Bonds usually are issued in denominations of $1,000, or some multiple of $1,000, and have a variety of features.

General Facts (Not In Book)

Issuing bonds has three advantages over issuing stock as a means of obtaining financing:

- Control of the company is not diluted because bondholders do not have voting rights.
- The interest paid to bondholders is tax deductible; dividends are not.
- Financial leverage or trading on the equity occurs when a company earns more on the borrowed funds than it pays in interest, increasing net income for the excess.

There are also disadvantages to issuing bonds:

- Amounts borrowed must be repaid at maturity, unlike investments by stockholders which are not paid.
- Cash is required for periodic interest payments on bonds, whereas dividend payments on stock are discretionary.
- Financial leverage will decrease net income if an insufficient return is earned on the borrowed funds.

Bonds are debt instruments and bondholders are creditors of the corporation who are entitled on some specified date to periodic interest plus the principal of the debt. As is true for all creditors, the claims of bond holders for interest and principal take priority over stockholders' claims.
Bonds normally are due ten to fifty years after issue, and interest is usually paid semiannually. A bond issue is made up of the total number of bonds available at the same time. When all the bonds of an issue mature on the same date, they are called term bonds. When the bonds mature over several maturity dates, they are called serial bonds (the principal is repaid in installments). When registered bonds are issued, the corporation maintains a record of all bondholders and pays interest by check to the bondholders of record. Coupon bonds (Bearer Bonds) entitle the bearer to interest when the detachable coupons are deposited at a bank.

Bonds payable that are due in the current period can be classified as a current liability only if they will be paid with current assets. In addition, the characteristics of all bonds should be disclosed in the notes to the financial statements.

**Types of Bonds**

Secured bonds give the bondholders a claim to certain assets of the company on default; unsecured bonds (called debenture bonds) do not.

When bonds can be converted into other securities of the issuer (e.g., stock) at a specified rate at the option of the bond holders, they are referred to as convertible bonds. When bonds can be repaid early at the option of the company, they are referred to as callable bonds. When bonds can be redeemed early at the option of the bond holders, they are referred to as redeemable bonds.

Very often callable bonds will have a conversion feature. This allows the company to call the bonds at a time that it is economically beneficial to the bondholder to convert his or her bonds into stock. Under these circumstances, most bond holders convert their bonds into stock, and the company never has to repay the bonds.

**Issuing Procedures**

When bonds are issued, the corporation executes a contract with the bondholders called a bond indenture. In addition, the company issues bond certificates as evidence of its indebtedness. The rights of the bond holders are usually represented by a third-party trustee.

The face value of the bond is the amount that must be paid on the maturity date of the bond. The maturity date is the date that the final payment is due to the investor from the bond issuer (the company). The contractual interest rate (the stated interest rate) is the rate that is used to determine the amount of cash interest that the issuer must pay to the bond holder. Interest on bonds is usually paid semi-annually.
Determining the Market Value of Bonds

The value of a bond is equal to the sum of the present values of:

- the periodic interest payments, and
- the single payment of principal at maturity.

For example, assume that a bond, which pays interest at a rate of 8% interest compounded semi-annually, is being sold. Financial markets require an interest rate of 10%, compounded semi-annually. The bond has a term of ten years. The face value of the bond issue is $100,000. The value of the bond is computed as follows:

**Present Value of the Interest Payments (Annuity):**

Every six months, investors will receive $4,000. The present value of an annuity of $4,000 every six months discounted at an interest rate of 10%, compounded semi-annually is computed as follows:

\[
PV_{\text{annuity}} = P \left(\frac{1}{r}\right) \left(1 - \frac{1}{(1+r)^n}\right)
\]

\[
= $4,000 \left(\frac{1}{.05}\right) \left(1 - \frac{1}{(1.05)^{20}}\right)
\]

\[
= $4,000 \times 20 \times (1 - .376889)
\]

\[
= $4,000 \times 20 \times .623110517
\]

\[
= $4,000 \times 12.46221034
\]

\[
= $49,848.84
\]

**Present Value of the Principal Payment (Lump Sum):**

The bond holder will receive the face value of the bond at the maturity date:

\[
PV = P \left(\frac{1}{(1+r)^n}\right)
\]

\[
= $100,000 \times \left(\frac{1}{1.05}\right)^{20}
\]

\[
= $100,000 \times .376889
\]

\[
= $37,688.90
\]

**Present Value (Price) of the Bond:** $49,848.84 + $37,688.90 = $87,537.74

The current market rate of interest should be used for the foregoing computations. The rate used in the present value computations is referred to as the discount rate.
On the Balance Sheet, the Carrying Value of the Bonds is $87,537.74:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds Payable</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Less: Bond Discount</td>
<td>-$12,462.26</td>
</tr>
<tr>
<td>Carrying Value</td>
<td>$ 87,537.74</td>
</tr>
</tbody>
</table>

**Accounting For Bond Issues**

Bond prices are expressed as a percentage of face value (par value). For example, when bonds with a face value of $100,000 are issued at 97, the company receives $97,000.

**Issuing Bonds At Face Value**

When the face interest rate equals the market interest rate for similar bonds on the issue date, the company usually receives face value for the bonds. Regardless of the issue price, bondholders are entitled to the contractual interest rate.

Sold bonds at face value (par):

D. Cash $100,000  
   Cr. Bonds Payable $100,000

Accrue interest to bondholders:

D. Bond Interest Expense $10,000  
   Cr. Bond Interest Payable $10,000

Pay accrued interest to bondholders:

D. Bond Interest Payable $10,000  
   Cr. Cash $10,000

**Issuing Bonds At A Discount**

As can be seen in the above example, when the face interest rate is less than the market interest rate for similar bonds on the issue date, the bonds usually sell at a discount (less than face value). Unamortized Bond Discount is a contra-liability account to Bonds Payable in the balance sheet. The difference between the two is called the carrying value, an amount that increases as the discount is amortized and that equals the face value of the bonds at maturity.
Sold bonds at a discount:

D.  Cash $98,000
    Unamortized Bond Discount 2,000
    Cr.  Bonds Payable $100,000

The Bond Discount represents additional interest that will be paid to the bond holders. The company will pay the contractual interest rate, and at the maturity date, the company will pay $2,000 more than it actually borrowed. Remember that the company only received (borrowed) $98,000. Under the matching principle, this $2,000 extra interest must be expensed over the whole bond period, not just the time when it is paid. The allocation of this extra interest is call amortizing the Bond Discount. A portion of the Bond Discount will be expensed in every year of the bond.

**Issuing Bonds At A Premium**

When the face interest rate is greater than the market interest rate for similar bonds on the issue date, the bonds usually sell at a premium (more than face value). Unamortized Bond Premium is added to Bonds Payable in the balance sheet to produce the carrying value. A separate account should be established for bond issue costs; these are amortized over the life of the bonds.

D.  Cash $102,000
    Cr.  Bonds Payable $100,000
    Unamortized Bond Premium 2,000

The Bond Premium reflects additional borrowing by the company. In effect, the bond holders have told the company that you are paying too much in interest for the loan you are getting. The bondholders are telling the company that for the interest payments you are making you can borrow more money, and this amount will be repaid (together with interest) from the extra interest that you are already paying.

** Redeeming Bonds At Maturity**

At maturity, the company makes the following journal entry when it pays its bonds:

D.  Bonds Payable $100,000
    Cr.  Cash $100,000
**Redeeming Bonds Before Maturity**

As noted above, callable bonds are bonds that may be retired by the corporation prior to their maturity date (called early extinguishment of debt). When the market rate for bond interest drops, a company may decide to call its bonds and substitute debt with a lower interest rate. When bonds are called (for whatever reason), an entry is needed to eliminate Bonds Payable and any unamortized premium or discount and to record the payment of cash at the call price. In addition, an extraordinary gain or loss on the retirement of the bonds is recorded.

Retire bonds at a loss

D. Bonds Payable $100,000
   Unamortized Bond Premium 400
   Loss on Retirement of Bonds 2,600
Cr. Cash $103,000

The loss equals the excess of the call price over the carrying value (Note: If appropriate, an unamortized bond discount or a gain on retirement would have been credited in the entry.)

Retire bonds at a gain:

D. Bonds Payable $100,000
   Unamortized Bond Premium 400
Cr. Cash $99,000
   Gain on Retirement of Bonds 1,400

**Conversion of Bonds (Not In Book)**

Convertible bonds are bonds that can be exchanged for other securities (usually common stock) at the option of the bondholder. When a bondholder converts his or her bonds into common stock, the common stock is recorded by the company at the carrying value of the bonds. Specifically, the entry eliminates Bonds Payable and any unamortized discount or premium and records Common Stock and Paid-in Capital in Excess of Par Value, Common; no gain or loss is recorded.

Converted bonds payable into common stock:

D. Bonds Payable $100,000
   Unamortized Bond Premium 400
Cr. Common Stock $10,000
   Paid-in Capital in Excess of Par Value, Common 90,400

Note: No gain or loss recorded; also, an unamortized bond discount would have been credited in the entry, if appropriate.
Bond Sinking Funds (Not In Book)

Sometimes the bond indenture requires that the issuer set aside a certain amount of cash each year in order to ensure that the corporation will have sufficient cash with which to retire the bonds at maturity. This is called a sinking fund. If a sinking fund is required, it is usually disclosed in the notes to the financial statements, and the cash is carried on the issuer's balance sheet as an investment (e.g., Sinking Fund Cash and Sinking Fund Investment). Earnings on the sinking fund are Sinking Fund Revenue.

Financial Statement Analysis

Liquidity

As noted previously, liquidity is the ability of a business to meet its current cash needs. As mentioned in a previous chapter, a popular ratio used to evaluate a company's liquidity is the current ratio:

\[
\frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

Although your book does not mention it, a popular variation of the current ratio is the quick ratio (also known as the acid-test ratio):

\[
\frac{\text{Quick Assets}}{\text{Current Liabilities}}
\]

Quick Assets are cash, cash equivalents and accounts receivable. It does not include prepaid expenses and inventory.

Solvency

As noted previously, the ability of a business to meet pay its debts in the long-term is referred to as solvency. As noted in an earlier chapter, a popular ratio to measure solvency is the ratio of debt to total assets. Another popular ratio is the Times Interest Earned Ratio indicates the ability of a business to make its interest payments:

Times Interest Earned Ratio (also called Number of Times Interest Charges Earned) is calculated as follows:

\[
\frac{\text{Net Income} + \text{Interest Expense} + \text{Income Tax Expense}}{\text{Interest Earned}}
\]
The numerator is the pretax operating income.

**Amortizing Bond Discounts and Premiums**

When bonds are issued at a discount or premium, the interest payments on the bond are not the only interest being paid by the issuing corporation. The original discount amount represents additional interest on the bond, and the original premium amount represents a rebate of the interest being paid by the corporation. It reduces the interest cost of the corporation.

A zero coupon bond is a promise to pay a fixed amount at maturity, with no periodic interest payment. Investors receive their interest from the large discount on issue, which in turn is amortized by the issuing corporation over the life of the bond. Amortization generally is recorded on the interest payment dates using either the straight-line or the effective interest method.

**Straight-Line Amortization**

Under the straight-line method of amortization, the amount to be amortized each interest period equals the bond discount divided by the number of interest payments during the life of the bond.

Earlier we calculated the fair market value of a $100,000 bond issue that pays interest at a rate of 8% interest compounded semi-annually, is being sold. Financial markets require an interest rate of 10%, compounded semi-annually. The bond has a term of ten years. We calculated that the company selling that bond issue would receive $87,537.74. The face value of the bond issue is $100,000 and the discount is:

\[ 100,000 - 87,537.74 = 12,462.26 \]

With straight-line amortization, every six months you amortize the Bond Discount by:

\[ \frac{12,462.26}{20} = 623.11 \]

The journal entry for cash interest payment every six months is as follows:

D. Bond Interest Expense $4,000
Cr. Cash $4,000

The journal entry for amortization of bond discount every six months is as follows:

D. Bond Interest Expense $623.11
Cr. Bond Discount $623.11
Balance Sheet after first six months of bond discount amortization:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds Payable:</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Less: Bond Discount:</td>
<td>-11,839.15</td>
</tr>
<tr>
<td>Carrying Value:</td>
<td>$ 88,160.85</td>
</tr>
</tbody>
</table>

Amortization of a premium acts as an offset against interest paid in determining interest expense to be recorded. Under the straight-line method, the premium to be amortized in each period equals the bond premium divided by the number of interest payments during the life of the bond.

For example, assume that a bond, which pays interest at a rate of 10% interest compounded semi-annually, is being sold. Financial markets require an interest rate of 8%, compounded semi-annually. The bond has a term of ten years. The face value of the bond issue is $100,000. The value of the bond is computed as follows:

Present Value of Interest Payments:

Every six months, investors will receive $5,000. The present value of an annuity of $5,000 every six months discounted at an interest rate of 8%, compounded semi-annually is computed as follows:

\[
P V_{\text{annuity}} = P \left( \frac{1}{r} \right) \left( 1 - \frac{1}{(1+r)^n} \right)
\]

\[
= $5,000 \left( \frac{1}{.04} \right) \left( 1 - \frac{1}{(1.04)^{20}} \right)
\]

\[
= $5,000 (25) (1 - (1/2.191123))
\]

\[
= $5,000 (25) (.4563869)
\]

\[
= $5,000 (13.59032)
\]

\[
= $67,951.63
\]

Present Value of Principal Payment:

The bond holder will receive the face value of the bond at the maturity date:

\[
P V = P \left( \frac{1}{(1+r)^n} \right)
\]

\[
= $100,000 \left( \frac{1}{(1.04)^{20}} \right)
\]

\[
= $100,000 (.4563869)
\]

\[
= $45,638.69
\]

Price (present value) of the Bond: $67,951.63 + $45,638.69 = $113590.32
On the Balance Sheet, the Carrying Value of the Bonds is $113,590.32:

Bonds Payable: $100,000.00
Bond Premium: 13,590.32
Carrying Value: $113,590.32

Using the straight-line method of amortization, the Bond Premium would be amortized every six months.

With straight-line amortization, every six months you amortize the Bond Premium by:

\[
\frac{13,590.32}{20} = 679.52
\]

The journal entry for cash interest payment every six months is as follows:

D. Bond Interest Expense $5,000  
Cr. Cash $5,000

The journal entry for amortization of bond premium every six months is as follows:

D. Bond Premium $679.52  
Cr. Bond Interest Expense $679.52

Balance Sheet after first six months of bond premium amortization:

Bonds Payable: $100,000.00
Bond Premium: 12,910.80
Carrying Value: $112,910.80

**Effective Interest Amortization**

Using the straight-line method is very simple, but it is not very accurate. A discount means that you are delaying the payment of interest until the bond matures. That is a long time from the issue date. The bond holders are going to want interest paid on that delayed interest (interest compounding). The effective interest method takes interest compounding into account when amortizing a discount or premium. The effective interest method of amortization is more difficult to apply than the straight-line method, but under GAAP, it should be used when the amounts differ significantly.

To apply the effective interest method when a discount is involved, the market rate of interest for similar securities when the bonds were issued (called the effective rate of interest) first must be determined. This interest rate (halved for semiannual interest) is multiplied by the existing carrying value of the bonds for
each interest period to obtain the bond interest expense to be recorded. The actual interest paid is then subtracted from the bond interest expense recorded to obtain the discount amortization for the period. Because the unamortized discount is now less, the carrying value is greater. This new carrying value is applied to the next period, and the same amortization procedure is followed.

Using the discount example described above, the Bond Discount of $12,262.26 is amortized as follows:

Interest for the first six month period:

Carrying Value of Bond x Market Interest Rate for Six Months
$87,537.74 x .05 = $4,376.89

The Corporation paid interest at a rate of 8% ($4,000). Therefore the Corporation still owes $376.89 in interest to the Bond Holders. So the Corporation reduces its Bond Discount by 376.89. This has the effect of raising the carrying value of the Bonds Payable:

The journal entry to pay interest:

D. Bond Interest Expense $4,376.89
    Cr. Cash $4,000.00
    Unamortized Bond Discount 376.89

Balance Sheet after first six months of bond discount amortization:

Bonds Payable: $100,000.00
Less: Bond Discount: -11,885.37
   Carrying Value:  $ 88,114.63

Interest for the second six month period:

Carrying Value of Bond x Market Interest Rate for Six Months
$88,114.63 x .05 = $4,405.73

The Corporation paid interest at a rate of 8% ($4,000). Therefore the Corporation still owes $405.73 in interest to the Bond Holders. So the Corporation reduces its Bond Discount by 405.73. This has the effect of raising the carrying value of the Bonds Payable:

The journal entry to pay interest:

D. Bond Interest Expense $4,405.73
    Cr. Cash $4,000.00
    Unamortized Bond Discount 405.73
Balance Sheet after second six months of bond discount amortization:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds Payable</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Less: Bond Discount</td>
<td>-11,479.64</td>
</tr>
<tr>
<td>Carrying Value</td>
<td>$ 88,520.36</td>
</tr>
</tbody>
</table>

The effective interest method is applied to bond premiums in the same way that it is applied to bond discounts. The only difference is that the amortization for the period is computed by subtracting the bond interest expense recorded from actual interest paid (the reverse is done for amortizing a discount).

Using the premium example described above, with the effective interest method the premium amortization would be as follows:

Interest for the first six month period:

Carrying Value of Bond x Market Interest Rate for Six Months
$113,590.32 x .04 = $4,543.61

The Corporation paid interest at a rate of 10% ($5,000). Therefore the Corporation has repaid $456.39 of the amount borrowed ($5,000 - $4,543.61). So the Corporation reduces its Bond Premium by 456.39. This has the effect of reducing the carrying value of the Bonds Payable:

The journal entry to pay interest:

D. Bond Interest Expense        $4,543.61  
    Unamortized Bond Premium     456.39  
    Cr. Cash                        $5,000.00

Balance Sheet after first six months of bond premium amortization:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds Payable</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Bond Premium</td>
<td>13,133.93</td>
</tr>
<tr>
<td>Carrying Value</td>
<td>$ 113,133.93</td>
</tr>
</tbody>
</table>

Interest for the second six month period:

Carrying Value of Bond x Market Interest Rate for Six Months
$113,133.93 x .04 = $4,525.35

The Corporation paid interest at a rate of 10% ($5,000). Therefore the Corporation has repaid $474.65 of the amount borrowed. So the Corporation reduces its Bond Premium by 474.65. This has the effect of reducing the carrying value of the Bonds Payable:
The journal entry to pay interest:

D.  Bond Interest Expense $4,525.35
    Unamortized Bond Premium 474.65
    Cr.  Cash $5,000.00

Balance Sheet after second six months of bond premium amortization:

<table>
<thead>
<tr>
<th>Account</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds Payable</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Bond Premium</td>
<td>12,659.28</td>
</tr>
<tr>
<td>Carrying Value</td>
<td>$112,659.28</td>
</tr>
</tbody>
</table>

**Issuing Bonds Between Interest Dates (Not In Book)**

When bonds are issued between interest dates, the interest that has accrued since the last interest date is collected from the investor on issue and returned to the investor (along with the interest earned) on the next interest date.

For example, assume that you sell $100,000 of 10% bonds dated April 1 one month after the date on the bonds (May 1).

One month of interest = $100,000 (.10)/12 = $833.33
So you collect $100,000 + 833.33 from the bond holders when you sell the bonds:

D.  Cash $100,833.33
    Cr.  Bond Interest Expense $833.33
         Bonds Payable 100,000.00

At the first interest payment (Oct 1), the Corporation pays out a full six months worth of interest (repaying the one month interest collected at the sale):

D.  Bond Interest Expense $5,000
    Cr.  Cash $5,000