ANALYSIS OF INCOME TAXES

LOS 1.A.a: define the key terms used in accounting for income taxes.

Here are key terms based on tax return:

- Taxable income: Income tax subject to tax.
- Taxes payable: Tax return liability resulting from current period taxable income. PAS 109 calls this "current tax expense or benefit."
- Income tax paid: Actual cash flow for income taxes, including payments (refunds) for other years.
- Tax loss carry forward: Tax return loss that can be used to reduce taxable income in future years.

Here are key terms based on financial reporting:

- Pretax income: Income before income tax expense.
- Income tax expense: Expense resulting from current period pretax income; includes taxes payable and deferred income tax expense.
- Deferred income tax expense: Accrual of income tax expense expected to be paid (or recovered) in future years; difference between taxes payable and income tax expense. Under SAAS 109, this results from changes in deferred tax assets and liabilities.
- Deferred tax asset: Balance sheet amounts expected to be recovered from future operations
- Deferred tax liability: Balance sheet amounts expected to result in future cash outflows.
- Valuation allowance: Reserve against deferred tax assets based on likelihood that those assets will be realized.
- Timing difference: The result of tax return treatment (timing or amount) of transaction that differs from financial reporting treatment.
- Temporary difference: Differences between tax reporting and financial reporting that will affect taxable income when those differences reverse. Similar to but slightly broader than timing differences.
- Permanent difference: Differences between tax reporting and financial reporting that will not reverse in the future.
LOS 1.A.b: explain why and how deferred tax liabilities and assets are created.

Tax reporting and financial reporting are based on two different sets of assumptions. This is particularly true in the US because financial reporting does not have to conform to tax reporting, as in Japan, Germany & Switzerland. As a result, taxes payable for the period are often different from the tax expenses recognized in the financial statements.

- Tax reporting is based on Internal Revenue Code (the tax code).
  - Modified cash basis of accounting is used in tax reporting to determine the periodic liability from currently taxable events.
  - Revenue and expense recognition methods used in tax reporting often differ from those used in financial reporting.

- Financial reporting is based on GAAP.
  - Accrual accounting is used in financial reporting to provide maximum information to allow evaluation of a firm's financial performance and cash flows.
  - Management is allowed to select revenue and expense recognition methods. A firm has a strong incentive to use methods to allow it to minimize taxable income.

**Basic Issue:** should tax and cash flow effects of revenues, expenses and other transactions be recognized in the period in which they affect taxable income or in the periods in which they are recognized in the financial statements?

Because of the differences between tax accounting and financial accounting, the financial statements may include tax liabilities or assets - allowances that have been made in the financial statements for taxes that have not yet been or have already been paid. Examples include the results of different depreciation methods employed (Accelerated Cost Recovery System for tax vs. straight line depreciation for financial reporting) and treatment of warranty expenses (allowed for financial reporting but not for tax reporting).

**Deferred tax liabilities** are required when future taxable income is expected to exceed pretax income, resulting in an excess of tax expense over taxes payable. Recall that taxes payable is calculated based on taxable income, and tax expense is calculated based on pretax income. Deferred tax liabilities on an individual transaction are expected to be reversed when these liabilities are settled, causing future cash outflows. **Different depreciation methods** or estimates used in tax reporting and financial reporting is the most common way that deferred tax liabilities are created.

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<table>
<thead>
<tr>
<th>Lower expense (e.g. depreciation) in financial reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results in pretax income higher than taxable income</td>
</tr>
<tr>
<td>And tax expense higher than taxes payable</td>
</tr>
<tr>
<td>Thereby creating deferred tax liabilities</td>
</tr>
</tbody>
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Differences between financial accounting and tax accounting can also give rise to deferred tax assets when future pretax income is expected to be more than taxable income, resulting in an excess of taxes payable over tax expense. Deferred tax assets on an individual
transaction are expected to be reversed when these assets are recovered, causing future cash inflows. Different treatments of warranty expenses in tax reporting and financial reporting are a common cause of deferred tax assets:

- For tax reporting, warranty expenses cannot be recognized until they have been incurred.
- For financial reporting, warranty expenses are recognized each year using accrual accounting, regardless of whether they are incurred or not.

<table>
<thead>
<tr>
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</tr>
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</tr>
<tr>
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</tr>
</tbody>
</table>

Two special issues about deferred tax assets:

- Treatment of tax losses:
  - Tax losses occur when tax deductions exceed taxable revenues.
  - Tax losses can be carried back to prior periods or forward to future periods.
  - When tax losses are carried forward to offset future taxable income, the expected benefits are recognized as deferred tax assets.

- Valuation allowance: this is a reserve against deferred tax assets if there is likelihood that these assets may not be realized in the future.
  - Valuation allowance is required if it is more likely than not that some or the entire deferred tax asset will not be realized.
  - Changes in the valuation allowance often affect reported earnings, and can be used by management to manipulate earnings. For example, aggressive firms may assume that no valuation allowance is necessary.
LOS 1.A.c: describe the liability method of accounting for deferred taxes.

The objectives are to recognize:

- Taxes payable or refundable for the current year.
- The deferred tax liabilities and assets (adjusted for recoverability) measured as the future tax consequences of events that have been recognized in financial statements or tax returns.

The method is based on the balance sheet. It recognizes the deferred tax consequences of temporary differences.

- Deferred tax assets (liabilities) represent assets (liabilities) on the balance sheet. They are calculated directly.
- Income tax expense is calculated using deferred tax assets and liabilities. There should be no attempt to match income tax expense directly with pretax income.
- Changes in tax rates (or other tax regulations) that affect the estimated future tax liability are recognized in reported income in the year the change is enacted.

If constant tax rate is assumed, the procedures are:

- Compute Taxes Payable: Taxable Income x Tax Rate.
- Identify two types of temporary differences: those creating deferred tax liabilities (pretax income > taxable income), and those creating deferred tax assets (pretax income < taxable income).
- Deferred Tax Assets: Cumulative Temporary Differences That Create Deferred Tax Assets x Tax Rate.
- Deferred Tax Liabilities: Cumulative Temporary Differences That Create Deferred Tax Liabilities x Tax Rate.
- Compute tax expense: taxes payable + change in deferred tax liabilities (current year deferred tax liabilities - previous year's) - change in deferred tax assets (current year deferred tax assets - previous year's).

Treatment of operating losses:
Tax losses can be carried back and applied to prior years to obtain refunds of taxes paid. They can also be carried forward to future periods. Because the realization of tax loss carry forwards depends on future taxable income, the expected benefits are recognized as deferred tax assets. Such assets are recognized in full but a valuation allowance may be required if recoverability is unlikely.

Valuation allowance:
Deferred tax assets are reduced by a valuation allowance to amounts that are "more likely than not" to be realized, taking into account all available positive and negative evidence about the future. For determining whether deferred tax assets must be reduced by a valuation allowance, all available positive and negative evidence must be considered. Information concerning recent pretax accounting earnings generally is critical. E.g. if the firm has been recording material cumulative losses recently it will be hard to justify a conclusion that tax credits can be realized in the near future. This will be evidence for the use of a valuation allowance (this is "negative evidence"). It is not necessary to quantify positive evidence for the conclusion that a valuation allowance is not required unless significant negative evidence exists. Where both positive and negative exist, judgment must be used in evaluating what evidence is more persuasive. More weight should be given to objectively verifiable evidence.
LOS 1.A.d: Discuss the implication of a valuation allowance (i.e., when it is required, what impact it has on the financial statement, and how it might affect an analyst’s review of a company

A valuation allowance is a contra account (offset) against deferred tax assets based on the likelihood that these assets will not be realized.

For deferred tax assets to be beneficial, the firm must have future taxable income. If it is more likely than not that a portion of deferred tax assets will not be realized, then the deferred tax asset must be reduced by a valuation allowance. It is up to management to defend the recognition of all deferred tax assets.

A valuation allowance reduces income from continuing operations. Because an increase (decrease) in the valuation allowance will serve to decrease (increase) operating income, changes in the valuation allowance are a common means of managing earnings.

Whenever a company reports substantial deferred tax assets, an analyst should review the company financial performance to determine the likelihood that those assets will be realized.
LOS 1.A.e: explain the factors that determine whether a company's deferred tax liabilities should be treated as a liability or as equity for purposes of financial analysis.

A firm's deferred tax liability that occurs during an accounting period represents the portion of income tax expense that has not been paid. Therefore, from a pure accounting perspective, deferred tax liabilities are an accounting liability. However, from a financial analyst's perspective, whether deferred tax liabilities should be considered as liabilities or not depends on whether they will reverse in the future. If they will and result in a cash outflow, then they should be treated as liabilities. If not, then they should be treated as equity! As deferred tax liabilities are created by temporary differences, reversal of a deferred tax liability depends on the reversal of the temporary difference that created it.

Changes in a firm's operations or tax law may result in deferred taxes that are never paid or recovered. For example, the use of accelerated depreciation methods for tax reporting creates a temporary difference. Normally when less depreciation is taken in later years, the deferred tax liability created by more depreciation in earlier years will be reversed. However, for firms with high growth rates, increased investments in fixed assets result in ever-increasing new deferred tax liabilities, which replace the reversing one. That is, a firm's growth may continually generate deferred tax liabilities. In this case the deferred taxes are unlikely to be paid. Therefore, for such high-growth firms deferred tax liabilities will not reverse, and should be treated as equity.

Deferred tax liabilities are recorded at its stated value. Even if deferred taxes are eventually paid, payments typically occur far into the future. The present value of those payments is considerably lower than the stated amounts. Thus, the deferred tax liability should be discounted at an appropriate interest rate, and the difference should be treated as equity.

In some cases, financial statement depreciation understates the value of economic depreciation. Instead, the accelerated depreciation in tax reporting is a better measure. Such cases include equipment obsolescence due to technology innovation, or rising price levels. Consequently deferred tax liabilities are neither liabilities nor equity if they are not expected to reverse, and should be ignored by financial analysts.

They are not liabilities since they will not reverse.
- They are not equity since adding the entire tax liabilities to equity overstates the value of the firm.
- To the extent that deferred taxes are not a liability, then they are stockholders' equity.

In practice, the financial analyst must decide on the appropriate treatment of deferred taxes on a case-by-case basis.
LOS 1.A.f: distinguish between temporary and permanent differences in pretax financial income and taxable income.

Numerous items create differences between pretax income and taxable income. These differences can be divided into two types:

- Temporary differences, which cause deferred tax liabilities or assets. They occur only if both of the following conditions are met:
  - A revenue or expense item is recognized for both tax reporting and financial reporting; and
  - Different methods are used in tax reporting and financial reporting to allocate the revenue or expense to accounting periods.

Note that the total revenue or expense is the same, but it is allocated to accounting periods differently. The differences are temporary in a sense that such differences will be reversed some time in the future. Different depreciation methods or estimates used in tax reporting and financial reporting are a common cause of temporary differences.

- Permanent differences, which do not cause deferred tax liabilities or assets. They occur if a revenue or expense item:
  - Is recognized for tax reporting but never for financial reporting; or
  - Is recognized for financial reporting but never for tax reporting.

Therefore, permanent differences result from revenues and expenses that are reportable on either tax returns or in financial statements but not both. Permanent differences arise because the tax code excludes certain revenues from taxation and limits the deductibility of certain expenses. In the US, for example, interest income on tax-exempt bonds, premiums paid on officer's life insurance, and amortization of goodwill (in some cases) are included in financial statements but are never reported on the tax return. Similarly, certain dividends are not fully taxed, and tax or statutory depletion may exceed cost-based depletion reported in the financial statements. Tax credits are another type of permanent difference. Such credits directly reduce taxes payable and are different from tax deductions that reduce taxable income. These differences are permanent because they will not reverse in future periods.

No deferred tax consequences are recognized for permanent difference; however, they result in a difference between the effective tax rate and the statutory tax rate that should be considered in the analysis.
Revenue or Expense

Is it recognized for both tax reporting and financial reporting?

Yes

Are different allocation methods or estimates used in tax reporting and financial reporting?

Yes

Temporary difference

Deferred tax assets or liabilities

Is it recognized for tax reporting but never for financial reporting or vice versa?

Yes

Permanent Difference

Reduces effective tax rate
LOS 1.A.g: compute income tax expense, income taxes payable, deferred tax assets, and deferred tax liabilities.

Example:

- During year one, the tax rate is 40%
- Starting in year two, the tax rate will fall to 35%
- Assume taxable income is $20,000
- Pretax income is $30,000.
- The $10,000 difference is temporary (reverses in the future)
- The deferred tax liability is determined by the tax rate that will exist when the reversal occurs (35%).

The deferred tax liability is $3,500 (.35)($10,000). The tax expense is $11,500 [(.40)($20,000) + $3,500]

Example:

A firm has a deferred tax asset of $1,000 and a deferred tax liability of $5,000 each deferred at a 50% tax rate. If the tax rate is reduced to 40% (a 20% reduction in tax rates), then the deferred tax asset and liability is revalued at the new tax rate. The asset and liability is reduced by the 20% reduction in tax rates.

Hence, the deferred tax asset is reduced by $200 to $800 and the deferred tax liability is reduced by $1,000 to $4,000. Current tax expense is reduced by $800 ($1,000 decrease in liability less $200 decrease in asset). The opposite results if the tax rate increases by 20% (from 50 to 60%). Tax expense would increase by $800 ($1,000 increase in deferred tax liability less the $200 increase in deferred tax asset).
LOS 1.A.h: calculate the adjustment to the financial statements for a change in the tax rate.

When tax rates change, the deferred tax liability or asset has to be adjusted to the new amount that is now expected, based upon the new expected tax consequences. The effect of this change in estimate will be included in the income from continuing operations.

The desired balance of the deferred tax asset or liability is computed using the new future tax rate, and the debit or credit to the deferred tax asset or liability is the amount necessary to bring it to the desired balance. Income taxes payables are computed based on the tax law in effect in the current year. Income tax expense is the amount needed to balance the journal entry.
ANALYSIS OF FINANCING LIABILITIES

LOS 1.B.a: compute the effects of debt issuance and amortization on the income statement, balance sheet, and cash flow statement.

Debt is classified as short-term and long-term.

- **Current liabilities** result from both operating and financing activities.
  - Those caused by operating activities include accounts payable and advances from customers. Operating and trade debt is reported at the expected (undiscounted) cash flow and is an important exception to the rule that liabilities are recorded at present value. Note that advances from customers are the consequence of operating decisions, the result of normal activity. They should be distinguished from other payables when analyzing a firm's liquidity. Advances are a prediction of future revenues rather than cash outflows.
  - Those resulting from financing activities include short-term debt and the current portion of long-term debt. They are recorded at present value. Note that the current portion of long term (LT) debt is the consequence of financing activity and indicate a need for cash or refinancing. A shift from operating to financing indicates beginning of liquidity problems, and inability to repay ST credit is a sign of financial distress.

- Long-term debt results from financing activities. It may be obtained from many sources that may differ in interest and principal payments. Some claims are below or subordinated to others while other claims may be senior or have priority. Whatever the different payment terms are, there are two basic principles:
  - Debt equals present value of the future interest and principal payments. For book values the discount rate is the rate when debt was incurred. For market values the discount rate is the current rate.
  - Interest expense is the amount paid to the creditor in excess of the amount received. Though total to be paid is known, allocation to specific time periods may be uncertain. The coupon rate is just the stated cash interest rate.

In this LOS we focus on debt resulting from financing activities.

At the time of issuance, the firm receives proceeds from issuing the bond. A bond payable is valued at the present value of its future cash flows (periodic coupon payments and principal repayment at maturity). These cash flows are discounted at the market rate of interest at issuance. Therefore, the value of the bond depends on the market rate of interest. For example, if the market rate of interest is higher than coupon rate, the bond value will be less than its face value, and the bond is issued at a discount.

- Balance sheet: initial liability is the amount paid to the issuer by the lender. The amount may not equal to the face value of the bond.
- Cash flow statement: CFF increases by the amount received.

At the end of each semiannual payment period, the firm makes a coupon payment:

- Income statement: interest expense is reported here. The effective interest rate is the market rate at the time of issuance, and the interest expense is market rate multiplied
by the bond liability at the beginning of this 6-month period.

- Cash flow statement: CFO decreases by the coupon payment. The coupon rate and face value are used to calculate actual cash flows only.
- Balance sheet: the bond liability is adjusted if necessary. Liability over time is a function of (1) initial liability and the relationship of (2) interest expense to (3) the actual cash payments. That is, the difference between interest expense and coupon payment represents the change in bond liability during this period:

\[
\text{Change In Bond Liability} = \text{Interest Expense} - \text{Coupon Payment}.
\]

\[
\text{The Ending Bond Liability} = \text{Beginning Bond Liability} + \text{Change In Bond Liability}.
\]

The bond premium or discount is amortized over the life of the bond by what is known as the interest method - it results in a constant rate of interest (not a constant interest expense) over the life of the bond.

- If the bond is issued at a premium, interest expense is always lower than coupon payment, and decreases over time. In this case the interest expense is only one component of the coupon payment. The rest of the coupon payment is used to amortize the bond's premium.

- If the bond is issued at a discount, interest expense is always higher than coupon payment, and increases over time. In this case the interest expense has two components: the coupon payment, and amortization amount of the bond's discount.

- If the bond is issued at par, interest expense equals coupon payment.

At any point in time the liability on the B/S will equal the present value of the remaining cash flow payments to the creditor discounted at the effective market interest rate.

At the maturity date, the firm repays the face value of the bond. The treatment and effects of the last coupon payment are the same as shown above.

- Balance sheet: the bond liability is reduced by the face value.
- Cash flow statement: similar to the treatment of initial cash received; the final face value payment is treated as cash from financing (CFF).

Total interest expense is equal to amounts paid by the issuer to the creditor in excess of the amount received.

For bonds issued at a premium or discount, reporting coupon payments as cash outflow from operations is inappropriate. For example, if a bond is sold at a premium, part of the coupon payment is used to amortize the premium and reduce the principal, and therefore should be treated as a financing cash outflow. As a result, CPO is understated and CPF is overstated by the amortization amount of the bond's premium.
**LOS 1.B.b: discuss the effect on reported cash flows of issuing zero-coupon debt.**

Zero Coupon Bond (ZCB) has no periodic interest payments and is issued at a large discount from par. The proceeds at issuance equal the present value of the face value, discounted at the market value of interest at issuance. Repayment at maturity includes all the (implied) interest expense (equal to face value minus the proceeds) from the time of issuance:

\[
\text{Total Implied Interest} = \text{Par Value} - \text{Proceeds Received}.
\]

In essence, zero-coupon bonds are a special type of discount bonds. Therefore, their effects on financial statements are similar to those of discount bonds.

- The interest expense on a zero-coupon bond never reduces operating cash flow. Reported CFO is systematically "overstated" when a zero-coupon (or deep-discount) bond is issued, while CFF is understated by the amortization amount of the discount and should be adjusted accordingly.

- Unlike discount bonds (whose reported CFO is reduced by the coupon payments), they make no coupon payments so they have no effect on reported CFO.

- Solvency ratios, such as cash-basis interest coverage, are improved relative to the issuance of par bonds. The cash eventually required to repay the obligations may become a significant burden.

**LOS 1.B.c: discuss the effect of changing interest rates on the market value of debt and on financial statements and ratios.**

Debt reported on the balance sheet is equal to the present value of future cash payments discounted at the market value on the date of issuance. Increases (decreases) in the current market value rate decrease (increase) the market value of the debt. This economic gain or loss is **NOT** reflected in either the income statement or balance sheet.

For some analytic purposes the market value of a company's debt may be more relevant than its book value. For example, consider two firms that issued par bonds (coupon rate equals the market rate of interest at issuance). Firm A issued the bond when interest rates were high, and firm B issued the bond when interest rates were low. Both firms report the same book value of debt, which is equal to the face value. Therefore, all else equal, both firms will have the same debt-to-equity ratio based on their balance sheets. However, firm B has a lower future coupon payment obligation, indicating stronger borrowing capacity. For the purpose of financial analysis, the lower market value of debt results in a lower debt-to-equity ratio, which reflects the firm's true borrowing capacity.
LEASES AND OFF-BALANCE-SHEET DEBT

LOS 1.C.a: classify a lease as capital or operating.

When purchasing an asset the buyer acquires ownership of the asset and all benefits and risks embodied in the asset. A firm may acquire use of the asset, including some or all the benefits and risks for specified periods of time, by making payments through contractual arrangement called a lease. Using leases, a firm can avoid tying up too much capital in fixed asset investment. Some incentives are:

- Tax incentives.
- Non-tax incentives:
  
  Favors Operating lease:
  1. Period of use is short relative to overall life of asset.
  2. Lessor has comparative advantage in reselling the asset.
  3. Corporate bond covenants contain specific covenants relating to financial policies that the firm must follow. OL results in lower leverage ratios and higher asset turnover ratios.
  4. Management compensation contracts contain provisions expressing compensation as a function of returns on invested capital.

  General incentives for leasing:
  1. Lessee ownership is closely held so that risk reduction is important.
  2. Lessor has market power and can generate higher profits by leasing the asset than selling it.
  3. Asset is not specialized to the firm.
  4. Asset's value is not sensitive to use or abuse (as owner takes better care of asset than lessee).

Operating leases (OL) allow the lessee to use the property for only a portion of its economic life. OLs are accounted for as contracts. Lessee reports only the required lease payments as they are made. There is no B/S recognition of the property. For the lessor payments received are recognized as income, the property remains on the B/S and is depreciated over time.

Benefits of OL:
- Leasing asset avoids recognition of debt on lessee's BS;
- OLs result in higher profitability ratios and reduce reported leverage for lessees.

Capital leases (CL) involve effective transfer of all risk and benefits of property to the lessee. The lessor finances the transaction through the leased asset. CL is economically equivalent to sales, and is treated as sales (on credit) for accounting purposes. The asset and associated debt are reported on the B/S of the lessee and the asset is depreciated over its life. Lease payments are treated by lessee as payment of both principal and interest.

Benefits of CL:
- Lessors have earlier recognition of revenue and income by reporting a completed sale though the substance of the transaction is similar to installment sales or financing.
In an operating lease the lessee expenses the payments as they are made. In a capital lease the value of the lease is booked to fixed assets and to long and short-term debt.

A lease meeting *any of the following criteria at inception* must be classified as a capital lease by the lessee:

1. The lease transfers ownership of the property to the lessee at the end of the term.
2. The lease contains a bargain purchase option that the lessee may purchase the leased asset for a price that is significantly below its fair market value at the end of the lease term.
3. The lease term exceeds 75% of the asset's economic life.
4. The PV of the minimum lease payments (MLPs) equals or is greater than 90% of the asset's fair market value, using the lessee's incremental borrowing rate or the implicit rate of the lease.

From a lessor's perspective, a lease is classified as a capital lease if at the inception the lease meets *any of the above four criteria, and both* of the following two revenue recognition criteria:

- Collectability of lease payments is reasonably predictable.
- There are no significant uncertainties regarding the amount of unreimbursed costs yet to be incurred by the lessor. That is, future costs are reasonably predictable, so the lessor's performance is substantially complete.

A lease that does not meet any of the four criteria is classified by the lessor as an operating lease.
LOS 1.C.b: calculate the effects of capital and operating leases on financial statements and ratios

Suppose a non-cancelable lease begins on Dec. 31, 19X0 with annual MLPs of $10,000 made at the end of each year for four years. Ten percent is assumed to be the appropriate discount rate.

Operating Lease for a Lessee:

- No entry is made at the inception of the lease.
- Over the life of the lease, only the annual rental expense (an operating expense) of $10,000 will be charged to income and CPO.

Operating Lease for a Lessor:

- The leased asset is reported on the lessor's balance sheet, because the lessor still retains the ownership of the asset. Accordingly, the lessor will depreciate the asset during the term of lease.
- Over the life of the lease, periodic lease payments from the lessee are reported as rental revenue on the income statement. They are recorded as operating cash flows.

Capital Lease For a Lessee:

- At the inception of the lease, an asset (leasehold asset) and liability (leasehold liability) equal to the present value of the lease payments, $31,700, is recognized. The implicit interest rate of the lease is the discount rate that sets the aggregate present value of lease payments to be equal to the fair market value of the leased asset.
- Over the life of the lease:

  1. The annual rental expense of $10,000 will be allocated between interest and principal payments on the $31,700 leasehold liability according to the amortization schedule.
     
     - Interest Payment = Beginning Lease Obligation x Implicit Discount Rate
     - Principal Repayment = Lease Payment - Interest Payment
     - Ending Lease Obligation Repayment = Beginning Lease Obligation – Principal Repayment

     It is accounted for as interest expense, which reduces income and cash flow from operating activities.

     It reduces lease liability and cash flows from financing activities. It has no effect on the income statement.
2. The cost of the leasehold asset of $31,700 is charged to operating (annual depreciation is $7,925) using the straight-line method over the term of the lease. Depreciation is charged to income, but has no effect on cash flows.

Amortization schedule:

<table>
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<tr>
<th>Year</th>
<th>Opening Liability</th>
<th>Interest</th>
<th>Principal</th>
<th>Closing Liability</th>
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Financial effects:

- **B/S effects:**

  When a lease is a CL, gross ($31,700) and net amounts are reported at each BS date. CL increases asset balances, resulting in lower asset turnover and lower ROA, compared to OL classification.

  The current liability is the principal portion of the first lease payment. Non-current liability is the rest of the principal. At lease's inception leased assets and liabilities (A&L) are equal at $31,700.

  A most important effect of a CL is the impact on leverage ratios, which result in an increase in debt to equity, and other leverage ratios. As lease obligations aren't recognized for OL leverage ratios are understated.

- **Income statement (IS) effects:**

  An OL charges constant rental payments to expense as accrued, whereas a CL recognizes and apportions depreciation and interest expense over the term of the lease.

  - Operating income:

    Capitalization results in a higher EBIT, as the straight-line depreciation expense of $7,925 is lower than the Operating Lease rental expense of $10,000.

  - Total expense & net income:

    CL interest expense falls over time and depreciation expense is constant (straight-line depreciation) or declining (accelerated depreciation method). Total expense for CL declines over the lease term. Initially it's higher than OL expense but over time it becomes lower. Tax expense and net income for an OL are constant over time. Tax expense and net income for a CL increase and for a CL one also reports an accumulating deferred tax expense.

    In general, compared to a CL, firms using an OL generally report higher profits, interest coverage and ROA. Lease expense (for CL = $11,095) exceeds lease payments (for OL = $10,000) so there will be a deferred tax credit. Deferred tax amount increases until lease expense is less than lease payments, and then the account declines and is eliminated by the end of the lease.

    No deferred tax is reported for OL since the amount deductible for taxes and
reported lease expense are always the same. Total (interest and depreciation) expense for CL must equal total rental expense on a OL, over the life of the lease. Net income is not affected by CL but CL reports lower income earlier in lease term and higher income later.

- **Cash flows:**

  Under OL all cash flows are operating and there is an operating cash outflow of $10,000 per year. Annual payments of $10,000 create a tax benefit of $3,500 per year, which is deductible regardless of lease method used. CL produces operating cash flows (CPO) and financial cash flows (FCF). The $10,000 paid under CL is allocated between interest and amortization of the lease obligation (reported as cash from financing).

  For CL as interest expense declines over lease and an increasing portion is allocated to the lease obligation, the difference in CFO increases over the lease. CL therefore decreases operating cash outflow while increasing financing cash outflow.

**Summary (For a Lessee):**

- CL increases CFO (as only interest expense is deducted) and decreases PCF.
- Comparing CL to OL:
  - For CL, current ratio decreases; debt equity ratio increases and times interest coverage ratio decreases.
  - For an OL, lease payments (-L) go to CPO. CL: Only interest portion (-I) go to CPO. Since -L > -I (negatively) CFO will be overstated in CL.
- For an OL, no asset is reported; no liability recognized; leverage ratios are unaffected; lease payments are expenses and fully deductible, so no deferred taxes are required; all cash flows are operating cash flows.

All else equal, firms reporting operating leases will report better performance because:

- Their balance sheet will report less debt.
- They will report higher profits, which appear to be generated by a relatively smaller investment in assets.

**Summary (For a Lessor):** see LOS f please.
LOS 1.C.c: discuss the factors that determine whether a company would tend to favor capital or operating leases.

Incentives of an operating lease are:

- If the lessor is in a higher marginal tax bracket than the lessee, the lessor can take advantage of the depreciation of the leased equipment to reduce its taxable income.
- An operating lease avoids recognition of an asset and a liability on the lessee balance sheet.
- The lessee may have bond covenants regarding financial ratios.
- Management compensation is linked to invested capital returns.
- The lease term is shorter than the asset life.

Incentives of a capital lease (to the lessee) include the following:

- In the early years of the lease, total expense is greater, potentially leading to tax savings.
- Operating cash flow is higher under a capital lease.

LOS 1.C.d: describe types of off-balance-sheet financing.

Off-balance-sheet (OBS) financing is an attempt to borrow money in such a way that liabilities are kept off a firm's balance sheet and the associated interest expense off its income statement. The nature of OBS financing activities: the emphasis on accounting assets and liabilities (A&L) rather than recognition of economic resources and obligations limits the usefulness of financial statements and encourages firms to keep resources and obligations off the B/S.

Why pursue OBS financing? Historical cost B/Ss often underestimate the true value of assets, understating the firm's equity. Since the B/S lists the cost but not gain of assets there is little incentive to put assets on the BS in the first place.

- Avoid reporting high debt and leverage ratios (i.e. lower debt-to-equity ratio and higher interest coverage ratio), and to reduce the probability of technical default under restrictive debt covenants.
- Keep assets and potential gains off the financial statements but under the control of management.
- To acquire these assets because they contribute to the operations of the firm. Assets excluded from the financial statements do contribute to the operations of the firm.

Examples of OBS financing transactions:

- Finance subsidiaries: Legally separate and fully owned finance subsidiaries have been used to purchase receivables from parents, which use the proceeds to retire debt. If the parent firm owns more than 50% of a finance subsidiary, the parent controls the finance subsidiary, and the financial statements of the parent and its finance subsidiary must be consolidated. If no more than 50%, then the consolidation is not required. For the purpose of financial analysis, the pro rata share of assets and liabilities in an uncontrolled financial subsidiary should be added back to the parent's balance sheet.

- A firm can sell its receivables to an unrelated party, and use the proceeds to pay off
its liabilities. Typically, the firm continues to service the original receivables, and transfers payments of those receivables to the buyer. The buyer is normally a financial institution or investor group. Sale of receivables to unrelated parties is simply collateralized borrowing because receivables sold that have not yet been collected should be considered as the selling firm's off-balance-sheet short-term liabilities. However, such transactions are recorded as sales under US GAAP, as long as there has been a legal transfer of ownership from the seller to the buyer. To qualify for sale recognition, the seller typically sets up a non-consolidated trust or subsidiary that its creditors cannot access in the event of bankruptcy. Such a bankruptcy-remote subsidiary is referred to as a qualifying special-purpose entity (QSPE). By reporting such transactions as sales, the seller can reduce accounts receivable and increase cash flow from operations in the period of sale.

By using the proceeds from sale of receivables to pay off debt, a firm can reduce accounts receivables and debt, and increase cash from operations (CFO). As a result, sale of receivables reduces the debt-to-equity ratio and increases receivables turnover. Since uncollected receivables are in fact its short-term borrowing, the firm may report higher liquidity ratios (e.g. quick ratio) than if those receivables were not sold.

- **Take-or-pay contracts** ensure long-term availability of raw materials and other inputs necessary for operations. Under these arrangements, the purchasing firm commits to buy a minimum quantity of an input (raw materials for a take-or-pay arrangement, and service such as pipeline transportation for a throughput arrangement) over a specific time period. The purchaser must make specified minimum payments even if it does not take delivery of the goods. Input prices may be fixed by contract or may be related to market prices.

Natural resources companies use **throughput arrangements** with pipelines or processors (such as refiners) to ensure future distribution or processing requirements.

In essence, they are the purchaser’s debt obligations, though kept off the balance sheet. These contracts are often used as collateral for bank or other financing by unrelated suppliers or by investors in joint ventures. The contract serves as an indirect guarantee of the related debt. However, neither the assets nor the debt incurred to obtain operating capacity are reflected on the balance sheet of the purchaser. The effect is to allow firms to acquire use of operating capacity without showing associated A&Ls on the B/S, resulting lower debt-to-equity ratios for these firms. Analysts should add the present value of minimum future commitments to both property and debt.

- **Commodity linked bonds**: Firms may finance purchases of inventory with debt linked to some underlying commodity to serve as a natural hedge against changes in commodity and inventory prices. These bonds’ interest payments and/or principal repayments depend on the price of the underlying commodities. Changes in commodity prices should be monitored to determine their impact on the related debt. For the purpose of financial analysis, any change in debt value should be reflected in the balance sheet.

- **Joint Ventures**: Firms acquire operations via joint ventures with other firms. Financing may involve direct or indirect guarantees of debt, which is not recognized on the balance sheet of any sponsoring firm. For the purpose of financial analysis, debt guarantees (or proportionate share of debt guarantees) should be added to the
• **Investment in affiliates:** A firm may hold stock in another firm, and also issue debt which it can exchange for the shares in the other firm, which should lower their borrowing cost, defer capital gains and give a tax break on dividends from the shares. It still owns the investment and can use the cash.

**LOS 1.C.e:** determine how take-or-pay contracts, throughput arrangements, and the sale of receivables affect selected financial ratios.

Since the debt on take-or-pay contracts and throughput arrangements is off-balance sheet, it lowers leverage ratios such as the debt ratio and the D/E ratio. For analytical purposes, the present value of the debt obligations should be added back to long-term liabilities and assets to restate the debt values.

The **sale of receivables** falsely reduces the receivables balance and short-term borrowings. Consequently, leverage ratios are too low, receivables turnover is too high, and the current ratio is too low. For analytical purposes, the receivables and short-term debt should be added back to the book value balances and the ratios should be calculated with these restated values.

**LOS 1.C.f:** distinguish between a sales-type lease and a direct-financing lease.

For a lessor, the lease must be capitalized if it meets any one of the four criteria specified for capitalization by lessee and both of the following revenue recognition criteria:

1. Collectability of the minimum lease payments is reasonably predictable.
2. There are no uncertainties regarding the amount of unreimbursable cost yet to be incurred by the lessor.

**Sale-leaseback (S-L)** transactions are sales of property by the owner who then leases it back from the buyer-lessee. The seller leases its own property, rather than selling it outright. Such leases involve two transactions:

• Selling the property at the time the lease is initiated.
• Providing financing to the lessee.

At the inception of the lease, a manufacturer treats the transaction as if it sold the asset to exchange for an investment in a capital lease. It recognizes a gross profit from the sale of the asset:

• **Sales** = Present Value Of Lease Payments.
  The total lease payments (un-discounted) are known as the lessor’s Gross Investment in Lease.

• **Cost Of Goods Sold** = Cost Of Leased Asset - Present Value Of Residual Value.

• **Gross Profit (Manufacturer’s Profit)** = Sales - Cost Of Goods Sold.

• In balance sheet it also records an asset:

  Net Investment In Lease == Present Value Of Lease Payment + Present Value Of Residual Value.
The difference between gross investment in lease and net investment in lease is the **unearned interest income**, which is the financing income component of the manufacturer's total profit.

**Periodic transactions:**

- Each year over the life of the lease, interest income is recognized using the following formula:
  \[
  \text{Interest Income} = \text{The Year's Beginning Value Of Net Investment In Lease} \times \text{Implicit Interest Rate Of The Lease.}
  \]
  It is a cash flow from operations.

- The difference between lease payment and interest income represents the portion of Net Investment in Lease recovered during the year. Recovery in Net Investment in Lease is an investment cash flow.

- The Net Investment in Lease at the end of the year is:
  \[
  \text{The Year's Beginning Value Of Net Investment In Lease} - \text{Net Investment Recovery.}
  \]

In a **direct financing lease**, a leasing company purchases a property from a manufacturer, and then leases the equipment to the lessee. The distinction between a sales-type lease and a direct financing lease is the presence/absence of a manufacturer's or dealer's profit. In a direct financing lease, the cost of the leased asset equals its market value, so only financing income is involved. In a sales-type lease, the cost of the leased asset is less than its market value (the present market value of lease payments), creating a manufacturer's or dealer's profit in addition to financing income.

As in a direct financing lease the lessor's original cost or carrying value (prior to the lease) of the asset approximates the market value of the leased asset (the present value of the MLPs), such leases are pure financing transactions and financial reporting for direct financing leases reflects this fact. No sale is recognized at the inception of the lease, and there is no manufacturing or dealer profit. Only financing income is reported.

### Effects of Sales - Type and Operating Leases on Lessor's Financial Statements

**Balance Sheet:**

- **Operating Lease:** the book value of the asset is reported on the balance sheet as a long-term asset, net of accumulated depreciation.
- **Sales-Type Lease:** Net investment in lease is reported in the balance sheet, and is amortized over the life of the lease. It is greater than the book value of the asset. The current and noncurrent components of the net investment in lease are reported separately. The current component is the amount of net investment to be recovered in the next year. The gain from sale of the asset recognized at the inception of the lease increases shareholder's equity.
- Therefore, sales-type lease results in higher total asset and higher shareholders' equity.

**Income Statement:**

- **Operating Lease:** at the inception of the lease, no income is recognized. Over the life of the lease, income tends to be constant if straight-line depreciation is used.
- **Sales-Type Lease:** at the inception of the lease, the gain from the sale of the lease
asset is recognized. Over the life of the lease, interest income tends to decline over time.

- The sales-type lease reports substantially higher income at the inception of the lease, thus recognizing income earlier than an operating lease. However, total income over the life of the lease is the same for both of them.

Cash Flow Statement:
- Operating Lease: at the inception of the lease, no cash flow occurs. Over the term of the lease, the entire lease payment is reported as an operating cash inflow.
- Sales-Type Lease: at the inception of the lease, gain from the sale of the leased asset is reported as an operating cash inflow. This cash inflow is offset by a net cash outflow for investment (net lease investment less cost of leased asset). Net cash flow remains zero. Over the term of the lease, the lease payment from the lessee is allocated to interest income (operating cash inflow) and net investment recovery (investing inflow).
- Sales-type lease reports higher operating cash flow at the inception of the lease, but lower operating cash flow over the lease term.