H2

Long-term Debt

Liabilities: probable future **sacrifices of economic benefits arising from present obligations** of a particular entity to transfer assets or provide services to other entities in the future **as a result of past transactions**

Present Value (PV):

- Lump sum of \$100 received 3 yrs from now on + 8% interest rate: $PV = \frac{\text{Lump Sum}}{(1+r)^t} = \frac{\$100}{(1+0.08)^3}$.
- 3 year \$100 ordinary annuity + 8%: $PV = \left(\frac{\text{Annual Cash Flow}}{r}\right)\left(1 - \frac{1}{(1+r)^t}\right)$

Bond Accounting:

- **Par Value**: (aka. face value) amount that is returned to the investor when the bond matures (or "principal"). E.g. if a bond is bought at issuance for \$1,000, the investor bought the bond at its par value. At the maturity date, the investor will get back the \$1,000.
- **Maturity**: The date the firm must repay the investors their par value.
- **Discount**: Amount below the par value at which the bond is trading at in the market at issuance; amortized over time ($MR > CR$)
- **Premium**: Amount above the par value at which the bond is trading at in the market at issuance; amortized over time ($MR < CR$)
- **Market Value / Fair Value**: Value at which a bond is currently trading at in the market; determined by market rates for similar bonds.
- **Carrying Value / Book Value**: Net amount between bond's face value and any unamortized premiums or minus any amortized discounts.
- **Coupon Rate**: The interest rate stated on the face of the bond. The periodic cash payments made to investors will be the coupon rate times the par value of the bond. Coupon payments are typically semi-annual
- **Zero Coupon Bond**: A bond that doesn't make periodic interest payments but one lump sum due at maturity
- **Market interest rate (at issuance)**: (aka. effective interest rate) rate that determines interest expense and book value (BV) of liability at issuance. Fixed at issuance. Rate investors demand to earn for loaning their money.
- **Market interest rate (current / after issuance)**: rate that determines current market value (MV) of bond. Based on mkt conditions and risk characteristics of borrower. Fluctuates over time.
- **Interest Expense**: = mkt rate at the time the bond is issued × net bond payable.
- **Interest payments**: = coupon rate × par amount.
- Difference between int. exp. and int. pymt. is accounted for in a balance sheet item called the bond discount (or premium).

E.g. Zero coupon bond that will result in a single payment of \$10,000 after 3 yrs; mkt rate: 6%: (FV = 10,000, CR = 0%, MR = 6%, Maturity = 3 yrs.)

Math: $8,396 \approx \frac{10,000}{(1+6\%)^3}$, $504 \approx 8,396 \times 6\%$

	Cash (A)	=	B/P (L)	-Discount (XL)	+	R/E (E)	Inc. Stat. Caption	Net B/P	Disc. Balance
iss.	8,369		10,000	1,604				8,396	1,604
Y1				-504		-504	Int. exp.	8,900	1,100
Y2				-534		-534	Int. exp.	9,434	566
Y3				-566		-566	Int. exp.	10,000	0
	-10,000		-10,000	0					

E.g. Coupon bond issued at par value: (FV = 10,000, CR = 6%, MR = 6%, Maturity = 3 yrs.) Cash flows can be seen as:

1. \$600 annuity for 3 yrs at 6% MR: $\left(\frac{\$600}{6\%}\right)\left(1 - \frac{1}{(1+6\%)^3}\right) \approx \$1,603.8$
2. \$10,000 single sum in 3 yrs at 6% MR: $\frac{\$10,00}{(1+6\%)^3} \approx \$8,396.2$

Total NPV of Cash Flows = $\$1,603.8 + \$8,396.2 = \$10,000$

	Cash (A)	=	B/P (L)	+	R/E (E)	Inc. Stat. Caption
iss.	10,000		10,000			
Y1	-600				-600	Int. exp.
Y2	-600				-600	Int. exp.
Y3	-600				-600	Int. exp.
	-10,000		-10,000			

Y1-Ended Statement of Cash Flows:

- inflow financing 10k - principal
- outflow operating 600 - interest

E.g. As of 12/31/23, a signle \$500k, 5-yr bond outstanding, issued at par with a fixed 4% int. rate. Fair value of the bond is \$510k. The bond matures in 12/31/28 and int. pymt. are made annually on 12/31: In 2024, record interest expense = $\$500k \times 4\% = \$20k$. Implications of bond fair value disclosures for both investors and the company:

- Fair value can differ from carrying value due to changes in interest rates or market conditions. If the fair value of the bond is higher than the carrying value (as in this case), it indicates that the bond is trading at a premium. This can suggest that investors perceive the company as less risky, or that interest rates have decreased since issuance.
- For financial statement analysis: Fair value disclosures help investors assess the current market value of debt. A discrepancy between fair value and carrying value may signal changes in the company's credit risk or broader market conditions.

Early retirement of debt: (aka. buying back bond) Market value of debt can differ from book value:

- Firm's economic conditions (credit quality) $MV > BV \rightarrow$ loss
- Macroeconomic conditions (interest rates) $MV < BV \rightarrow$ gain

E.g. Repurchase the zero coupon bond in the open market on 12/31/22 (2 yrs to maturity) when the firm's mkt rate is 6% (inc.d from 5%): when the balances in the respective accounts are:

	B/P (L)	-Discount (XL)
12/31/22	10,000	930

PV of \$10,000 2 yrs from now $= \frac{\$10,000}{(1+6\%)^2} = \$8,900$ which is less than the NBV of $10,000 - 930 = \$9,070$. The market value of the liability went down, meaning that they can pay off their obligations for less than the amount recorded on the books.

Cash (A)	=	B/P (L)	-Discount (XL)	+	R/E (E)	Inc. Stat. Caption
-8,900		-10,000	-930		170	Gain on retirement of debt

Gain/loss on early retirement of debt reported on the income statement.

Marking bond to market: At issuance 1/1/21, FV = \$10k, CR = 10%, MR = 10%. 12/31/21, bond's MV is \$9.6k. Either BSE:

-Discount (XL)	FMV Adju. (E)
400	400 (change in FMV)

-Discount (XL)	-FMV Adj. (XL)	R/E(E)	Inc. Stat. Caption
0	400	400	FMV adj.; unreal. gain

Leases

Lease: an agreement conveying the right to use property, plant, or equipment usually for a stated period of time.

Players: lessor (owner) and lessee (renter)

	Loan	Lease
Down pymt required	Bigger	Smaller / None
Maintenance and support provided?	Not by bank	Yes
Flexibility - trade up, return?	No	Yes
Obsolescence risk?	Yes	No
Restrictive covenants?	Often	No

Finance Lease: Lessee owns property and records the leased asset on the B/S.

- Balance Sheet:
  - **Lease Asset**: = PV of lease pymts; amortized over time like PPE
  - **Lease Liability**: = PV of lease pymts; Reduced as pymts are made like a mortgage
- Income Statement:
  - **Amortization Expense**: = PV of periodic lease pymts/term of the lease; same every period with straight-line method
  - **Interest Expernse**: = int. rate × outstanding lease liability; decreases every period
- Cash Flow Statement:
  - **Operating Outflow**: portion of payment classified as interest decreases over time
  - **Financing Outflow**: portion of payment classified as principal increases over time

Over time increasing principal pymts; decreasing interest pymts; interest = rate × balance at begining of period; balance declines to 0; total cash pymts constant over time.

E.g. Lease 2 yrs; \$2.5k/mo. (paid at month-end), assuming finance at 1%:

- PV of lease pymts = $2,500 \cdot \text{AnnuityTable}(r = 1\%, t = 24) = 53,108.48$
- Amortization exp. (straight-line) = $53,108.48/24 = 2,212.85$
- Mo 1 int. exp. = lease obligation × int. rate $= 53,108.48 \times 1\% = 531.08$
- Mo 2 int. exp = $(53,108.48 - 1,968.92) \times 1\% = 511.40$

	Cash (A)	Lease PPE (A)	-Acc. Amo (XA)	=	Lease Obligation (L)	+	R/E (E)	Inc. Stat. Caption
Signing		53,108.48			53,108.48			
Mo 1	-2,500				-1,968.92		-531.08	Int. exp.
Mo 1			2,212.85				-2,212.85	Am. exp.
Mo 2	-2,500				-1,988.61		-511.40	Int. exp.
Mo 2			2,212.85				-2,212.85	Am. exp.

E.g. On January 1, 2024, XYZ Corporation signed a 5-year lease for machinery with a present value of \$200,000 (rounded to the nearest thousand). The lease qualifies as a financing lease. The company will make annual lease payments of \$50,000, beginning on January 1, 2025. The implicit interest rate of the lease is 8%. The company uses straight line, and there is no residual value for the lease:

Date	Cash (A)	Right to use Asset (A)	-Accum Dep. (XA)	=	Lease Payable (L)	R/E (E)	Inc. State. Caption
1/1/24		200,000			200,000		
12/31/24			40,000			-40,000	Dep. exp.
1/1/25	-50,000				-34,000	-16,000	Int. exp.
12/31/25			40,000			-40,000	Dep. exp.
1/1/26	-50,000				-36,720	-13,280	Int. exp.

If the implicit rate of the lease were 5% instead of 8%, but the payment schedule remained the same, how would it affect the balance sheet on the day they enter the lease in 2024 and the day they make their first lease payment on 1/12025 and record the related depreciation expense on 12/31/2024: On the date they enter the lease,

- assets would increase, since a lower discount rate increases the present value of the lease obligation. The magnitude is $216,474 - 200,000 = 16,474$
- shareholder's equity would stay the same, as entering a lease does not immediately affect equity.

After recording the lease payment and depreciation expense, total assets will be larger:

	5% interest rate	8% interest rate
Cash	-50,000	-50,000
Right to use asset	216,474	200,000
-Accum Amor (XA)	216,474 / 5 = 43,295	40,000
Net right to use asset	173,179	160,000
Total Assets	123,179	110,000

Shareholder's Equity

Shareholder's Equity						
Contributed Capital				- Treasury Stock	Retained Earnings	Comprehensive Income
Common Stock		Preferred Stock				
Par	APIC	Par	APIC			

Common Stock: Basic residual ownership share in the corporation.

- **Par value**: stated value on the face of the security; has no relation to mkt value
- **Additional paid in capital (APIC)**: Amount received from shareholders in addition to par value; i.e. the difference between capital raised (cash) and par value; if shares are bough back and then reissued, the difference between repurchase price and proceeds from sale increases / decreases APIC.

Three types of shares

- **Authorized**: # of shares that can be sold/issued; No journal entry is changed; amend corporate charter
- **Issued**: # of shares that were sold/issued; ≤ above
- **Outstanding**: # of issued shares actually owned by shareholders; = issued shares - issued shares held in treasury; ≤ above

E.g. Equity Issuance - Tesla raised \$402M in equity by issuing 1,536,000 shares of stock at a par value of \$0.001/share:

- Common stock = par value × # of shares outstanding
- APIC = Cash - Common Stock

Cash (A)	=	Common Stock (E)	APIC (E)
402M		1,536	401,998,464

Dividends (-R/E): returns paid to shareholders. When paid, dividends impact Cash (A) and R/E (E), but not the income statement; not an expense

1. **Declaration Date**: when the company's board announces the dividend; record liability
2. **Date of Record**: date on which shareholders must be on the company's records to receive the dividend. There is no transaction on this date
3. **Payment Date**: when the dividend is actually paid to shareholders

E.g. Dividend - on 1/21/25 XYZ Corp declares a dividend of 2 cents per share and it has 1 million shares outstanding. The date of record is 2/1/25, and the payment date is 2/28/25:

	Cash (A)	=	Dividend Payable (L)	+	R/E (E)	Inc. State. Caption
1/21/25			20,000		-20,000	Dividends
2/28/25	-20,000		-20,000			

Stock Dividends: (as opposed to cash).

- if < 25%, record the transaction at mkt value of the firm's stock
- if > 25%, record the transaction using the par value of the firm's stock

E.g. Stock Dividends - on 1/21/2025 XYZ Corp, which has 1,000,000 shares outstanding of $5 par value stock, makes a stock dividend of 10% when the market price $30 per share: # shares to be paid as dividends = $1,000,000 \times 10\%$ = 100,000; Par Value (E) = $\$5 \times 100,000$

Par Value (E)	APIC (E)	R/E (E)	Inc. State. Caption
500,000	2,500,00	-3,000,000	Stock Dividend

E.g. Stock Dividends - ditto but makes a stock dividend of 50%:

Par Value (E)	APIC (E)	R/E (E)	Inc. State. Caption
5,000,000		-5,000,000	Stock Dividend

Treasury Stock (Share Repurchases): stock which has been repurchased by the company. A contra equity account that increases when a company repurchases its shares. Why?

- Tax-advantaged way to distribute cash to investors (instead of dividends)
- To provide stock for stock compensation contracts
- To increase earnings per share (i.e., decrease the denominator)
- To thwart takeover attempts or reduce the number of stockholders (bar outsiders from gaining influence)

The accounting treatment of a stock repurchase is to reduce cash and to reduce Shareholders Equity. Thus, treasury stock is not an asset.

E.g. Tesla purchases 1 million shares at $420 per share:

Cash (A)	=	-Treasury Stock (XE)
-420M		420M

Stock options: Gives an employee a right (but not the obligation) to buy a specified number of shares at an established price.

- **Exercise price (or strike price)**:: the price the option holder pays to acquire the share
- **Expiration date**: date when employee can no longer exercise the option
- **Vesting period**: how long the option holder must work before being able to exercise all of their options
- **Cliff**: how long the option holder must work before being able to exercise any of their options
- **In-the-money**: the current share price > the exercise price
- **At-the-money**: the current share price = the exercise price
- **Out-of-the-money**: the current share price is < the exercise price

E.g. On Jan 1, 2020 Ram awards 100,000 stock options to its employees. Ram stock has a par value of $1, and the stock options have an exercise price of $5 per share. The current market price is also $5 per share (so the options are issued "at the money"). The estimated fair value of the options are $540,000. The vesting period is three years (so the options fully vest at the end of 2022). On Jan. 1, 2023, employees exercised 90,000 options (90% of the options) that vested. On that date, the market price of Ram Co. stock was $7 per share:

- no entry on grant date
- Compensation expense each year $\$540,000/3 = \$180,000$
- On 1/1/23, The amount collected from the employees totaled $450,000 or $5 x 90,000 options
- $450,000 = 90% of the $540,000

Date	Cash (A)	=	Paid in Capital Options (E)	Common Stock Par Value (E)	Paid in Capital Stock (E)	R/E (E)	Inc. State. Caption
12/31/20			180,000			-180,000	Comp. exp.
12/31/21			180,000			-180,000	Comp. exp.
12/31/22			180,000			-180,000	Comp. exp.
1/1/23	450,000		-486,000	90,000	846,000		

E.g. On January 1, 2024, XYZ Corporation granted 10,000 stock options to its executives. Strike price: $50 per share. The options vest over 4 yrs and have a fair value of $15 per option on the grant date. XYZ uses the straight-line method to recognize compensation expense:

Transaction for the compensation expense related to the stock options for the year ended December 31, 2024:

APIC Stock Options (E)	R/E (E)
37,500	-37,500 (Options exp.)

$37,500 = 15 \times 10,000/4$

Transaction for the exercise of all options in 2029 (after they vest). The employee pays cash when exercising. Par value of the stock is $1. The market value of the stock is $100

Cash	Common Stock	APIC Options	APIC Common Stock
500,000	10,000	-150,000	640,000

Earnings Per Share (EPS): = Net Income / Weighted Average Shares Outstanding. The amount of earnings for the period available to each share of common stock outstanding during the reporting period.

Impacts on Shareholder's Equity::

- **As options vest over time**: As compensation expense is recognized each year, it reduces retained earnings. However, it increases APIC, offsetting the reduction in retained earnings. Over time, as options vest, the net impact on shareholder's equity is neutral until the options are exercised.
- **Stock Issuance**: Increases both common stock and APIC, thus increasing total shareholders' equity.
- **Stock Repurchase**: Increases treasury stock (a contra-equity account), which reduces total shareholders' equity.

TAXES Taxable income **is not** accounting income | Tax expense **is not** cash taxes payable

Tax expense = on I/S and is an accrual number just like every other expense on the I/S

- Reflects costs incurred by firms for operating in the US
- Accrual → Tax "cost" matched to income when it is earned: not when settled through cash receipts/outflows

Effective Tax Rate = Tax Expense / GAAP pre-tax income

Defered Tax LIABILITY → Pretax income > Taxable income (similar to wages payable)

Example: Suppose Amazon has income before depreciation and taxes of $100,000 for both financial and tax reporting in both 2018 and 2019. Tax rate is 21%.

	Financial Reporting	Tax Reporting
2018 NI before taxes	50,000	0 (=100K "IBDT" – 100K dep. exp)
2018 Cash (Tax Payable)		0 (there is no income tax)
2018 Tax Expense	10,500	
2019 NI before taxes	50,000	100,000 (=100K "IBDT" – 0 dep. exp)
2019 Cash (Tax Payable)		21,000 (=100 income * 21% tax rate)
2019 Tax Expense	10,500	

	Cash (A)	Def. Tax Liability (L)	R/E (SE)
2018	0	10,500*	-10,500 (tax exp.)**
2019	-21,000	-10,500***	-10,500 (tax exp)

*Deferred tax liability reflects taxes expected to be paid in future. It occurs because tax expense is matched to revenue, but cash has not yet been paid.

**This is an accrual reflecting the cost of operating in the US. Much like A/P, the cost is recognized in the period when it is used to generate revenue; not when the cash is actually paid out.

***A deferred tax liability of $10.5K was created in 2018 (like an accrued "payable").
The reversal occurs in 2019 when the firm pays cash taxes.

Defered Tax ASSET → Pretax income < Taxable income (similar to prepaid insurance i.e. it is a reduction in the cash that the firm will have to pay in the future)

(Future tax payable<future tax expense)

Deferred tax assets arise when future taxes payable will be less than future tax expense b/c losses can be used to offset future taxable income and thus reduce tax burden. But if this asset is not "realizable," then it should be reduced. Similar to A/R that are not expected to be collected.

→ Firms reduce deferred tax assets by creating a **"DTA Valuation Allowance"**, a contra-asset account similar to ADA but for deferred tax assets

EX: Net Operating Loss and Deferred Tax Assets

In 2017, a firm has a tax loss of -1,000. Assume 21% tax rate. The company can uses these losses in the future to offset taxable income, so it records an asset = 21% x 1,000.

	DTA (A)	- DTA Valuation Allowance (XA)	R/E (SE)
2017	210		210 (NOL tax benefit)
At end of 2018, management expects that it will not have enough future income to use the DTA.			
2018		210	-210 (income tax expense / loss on DTA adjust)

ASSETS										LIABILITIES				SHAREHOLDERS EQUITY	
$ Cash	A/R	- ADA (XA)	Inv.	PPE	-Acc. Dep. (XA)	Prepaid (rent, asset)	Marketable Securities	Goodwill	Intangible	A/P	Deferred/ unearned Revenue	Wages Payable	Rent Payable	CC	RE

Accrual accounting is an attempt to measure firm performance in a particular period regardless of when cash is exchanged
Revenue Recognition: 1) Confirm contract exists, (2) Confirm obligations, (3) Determine transaction price, (4) Allocate transaction price (% for bundles, or recognize over time), (5) Obligations are met ➔ Must be earned and collectible; **Matching principle:** recognize expenses in same period as associated revenue

(Impact on ROA) SAMPLE TRANSACTIONS & CORRESPONDING BSE

(-) **Raise Capital:** +Cash (A) = +Contributed Capital (E)
(+) **Cash Sales:** +Cash (A) = +Retained Earnings (E) from sales revenue
(-) **Cost of Sales:** -Inventory (A) = -Retained Earnings (E) from COGS
(-) **Cash Expenses:** -Cash (A) = -RE (E) from … expenses
(+) **Sales on Account:** +A/R (A) = +RE(E) from sales revenue
(-) **Expenses on Account:** +.. Expenses Payable (L) –RE(E) from .. expenses
(N) **Buying Inventory:** -Cash (A) +Inventory(A)
(-) **Buying Inventory on Account:** +Inventory(A) = +A/P (L)
(N) **Prepaid Expenses:** -Cash(A) +Prepaid … (A) e.g. Rent/asset/…
(-) **Received Cash on Unearned Revenue:** +Cash(A) = +Def. Revenue(L)
(+) **Recognizing Revenue:** -Deferred Revenue(L) +RE(E) from revenue
(N) **Received Cash on Receivables:** +Cash(A) – A/R(A)
(+) **Paying Cash on Payables:** -Cash(A) = -A/P(L)
(-) **Provision for Uncollectible Amt:** +ADA(-XA) = -RE(E) from BDExpense
(N) **Write off Provision/Receivables:** -A/R(A) –ADA(-XA)
(N) **Acquiring Assets:** -Cash(A) + PPE(A)
(-) **Depreciation:** + AccDep(-XA) = -RE(E) from Depreciation Expense
(+/-) **Sale Asset:** +Cash(A) – PPE(A) –AccDep(-XA) = +/-RE(E) frm Gain/Loss
(-) **Impairment of Asset:** +AccDep (-XA) = -RE(E) from Impairment Loss

AccDep: Accumulated Depreciation

ACCOUNTS RECEIVABLE (A/R)

A/R (A)
Beginning Gross A/R
+ Credit Sales
- Cash Collected
- Write offs*
= Ending Gross A/R

ADA (XA)
Beginning ADA (XA)
+BDE
- Write-offs*
= Ending ADA (XA)

A/R, net = A/R, gross – ADA
**Write-offs = A/R that "goes bad" in time period (i.e. customer cannot pay). No impact on I/S but need to reduce ADA and A/R*

		Assets		S/E	
Date	Trans	AR	-ADA	R/E	Explanation
1/1/2020: Apollo sells $1 million in class enrollments & estimates that 4% of their sales will ultimately be uncollectible (i.e., bad debts). Ignore cost of goods sold.					
1/1/20	Rec. Rev.	+$1m		+$1m	Revenue
1/1/20	Accrue BDE		+$40k	-$40k	BDE (est. 4% not paid)
On 12/31/20, Apollo realizes that customer accounts totaling $40k will never be paid. Apollo records appropriate write-offs.					
12/31/20	Write off	-$40k	-$40k		No impact on R/E

EXAMPLE ADJUSTMENTS TO ADA

Date	Trans	AR	-ADA	R/E	Explanation
Scenario A: On 6/30/2001, Apollo has an ADA of $1m. A court rules that one of their agents engaged in unfair lending, and allows any students that enrolled through that agent to have their debts set aside. Apollo estimates the allowance should be $5m.					
6/30/01	Inc. ADA		+$4m	-$4m	BDE
Scenario B: On 6/30/2001: Apollo has an ADA of $1m. The allowance balance is too high. Apollo decides the allowance should be 0. (Assume write-offs are $0.)					
6/30/021	Dec. ADA		-$1m	+$1m	Gain on BDE re-estimation

ASSET TURNOVER = Revenue / Total Assets ➔ better if higher
Measure of how efficiently you are generating revenue from your assets
A/R TURNOVER = Revenue / Avg. Accounts Receivable
Measure of how quickly you collect cash on credit sales ➔ If company has lots of credit revenue, but very low receivables, it implies that you collect cash on your credit revenues quickly (higher = good)
DAYS RECEIVABLE (or "Average Collection Period) = 365 / A/R Turnover
AVERAGE A/R = (beginning AR + ending AR) / 2

REVENUE TRANSACTION DIFFERENCES

Assets	Liabilities	S/E
Cash	Def. Rev.	R/E
If Kenny signs up for 1-day seminar, pays $20,000 cash (same for 10 day seminar)		
+20k	+20k	
If Kenny attends 1st day of class after paying for the 10-day seminar		
	(2k)	+2k (rev.)

Revenue Recog.	Cash received		Cash paid	
	Now	Later	Now	Later
Concurrent	+C = +R/E		C = R/E	
Before	+C = +DefRev	0 = -DefRev +R/E	0 = C + PrepA	PrepA = R/E
After	+A/R = +R/E	0 = +C -A/R	0 = AccPay +R/E	C = AccPay

ACCOUNTING FOR INVENTORY: LIFO vs. FIFO

KEY INVENTORY EQUATION
Beginning Inventory
+ Purchases
– COGS
= Ending Inventory

INVENTORY TURNOVER = COGS / Average Inventory
(Measure how fast firm can sell inventory.
Higher value = faster inv. Turnaround)

ADJUSTING LIFO to FIFO:
LIFO RESERVE* = Ending Inventory_{FIFO} – Ending Inventory_{LIFO}
Δ LIFO Reserve* = COGS_{LIFO} – COGS_{FIFO}
COGS_{FIFO} = COGS_{LIFO} – Δ LIFO Reserve* **Find COGS on I/S**
INVENTORY_{FIFO} = INVENTORY_{LIFO} + Δ LIFO Reserve*
LIFO INSTEAD OF FIFO TAX = LIFO Reserve * Tax Rate
**Info may be found in the footnotes and may be called LIFO provisions as well*

Companies required to disclose cost of LIFO Inventory *b/c Inventory looks incredibly cheap, which is not reflective of reality (would cost a lot of money to replace) ➔ LIFO RESERVE - This number represents additional amount charged to COGS since firm began using LIFO.*
LIFO reserve is cumulative. If taking value over lifetime, keep as-is. If looking at in-year contribution, need to look at change in LIFO reserve y1-y2

Example: Using the LIFO Reserve to convert from LIFO to FIFO (black = given in financials)

	FY 2012	FY 2011	FY 2010
Total Inventory	712	647	651
COGS under LIFO	928	862	858
COGS under FIFO	928 – (213 – 204) = 919	862 - (204-219) = 877	828
LIFO Reserve	213	204	219
Total Inv. Under FIFO	712 + 213 = 925	647+204 = 851	870
Net Income	513	572	449
Effect of LIFO on (pre-tax) income	919-928 = -9	877-862 = 15	-30

Impact on financial statements assuming rising prices (exception can occur in instances of LIFO liquidation*.)

	FIFO	LIFO
COGS (IS)	Lower	Higher
Gross Profit (IS)	Higher	Lower
Ending Inventory (BS)	Higher	Lower

LIFO LIQUIDITION*: LIFO COGS looks lower than FIFO if dipping into cheaper inventory.

PROPERTY, PLANT & EQUIPMENT (PPE) / DEPRECIATION

Key Terminology/Equations
Acquisition Cost = purchase price
Salvage value = selling price at the end of the life
Depreciable base = Cost – salvage value
Accumulated depreciation = contra account that records value change
Book value aka net PPE = Cost – accumulated depreciation
Depreciation Rate = (Acquisition Cost – Salvage Value) / Estimated Useful Life
If adjusting ➔ ((Acuisition Cost – Acc. Dep.) – New Salvage Value)) / Remaining useful Life
Depreciation policy/rate affects I/S via depreciation and/or gains/losses and B/S (via NBV

	Assets			S/E	Notes
Date	Cash	PPE	-Acc. Depr.	R/E	
Purchase machine for $50k on 1/1/88 with estimated useful life of 9 yrs and salvage value= $5k. Calc ➔ Depreciation expense = (acquisition cost – salvage value)/ useful life = (50 – 5) / 9 = 5					
1/1/88	-50k	50k			
12/31/88			5k	-5k	Dep. Exp.
12/31/89			5k	-5k	Dep. Exp.
12/31/90			5k	-5k	Dep. Exp.
In January 1991, revised useful like to 6 years. ➔ Calc what new depreciation amount will be ➔ ((Acuisition cost – Acc. Depr.) – New Salvage Value) / Remaining useful life = ((50 – 15) – 5) / 3 = **10**					
12/31/91			10k	-10k	Dep. Exp.
In December 1992, sold the machine for $18k. 1. Record cash or 'market value of asset' received for the sold PPE 2. Record disposal of asset by removing (acquisition) cost of asset from PPE 3. Reverse or offset acc depreciation associated with asset 4. Calculate gain or loss: Cash – (Cost – Acc Dep) = Gain/Loss ➔ 18 – (50 – 35) = **3**					
12/31/92	18k	-50k	-35k	3k	Gain on sale

EQUATIONS & RATIOS

A/P TURNOVER = COGS / Accounts Payable
(How quickly can you pay your suppliers? Higher value = you pay faster)
CASH COLLECTED = Beg. AR + Credit Sales – End AR – Writeoffs
DEBT/EQUITY RATIO = Total Liabilities / Total Stockholders Equity
GROSS MARGIN % = Gross Profits / Revenues
INCOME STATEMENT EQUATION: Net Income = Revenues – Expenses
NET INCOME = Revenues – Expenses **OR** Retained Earnings + Dividends
(Doesn't get affected by dividends, dividends are what you can do with NI)
OPERATING MARGIN % = Operating Profits / Revenues
PROFIT MARGIN = Net Profit / Revenues
RETAINED EARNINGS (RE) = Beginning RE + Net Income – Dividends **OR** RE = SE – CC
RETURN ON EQUITY (ROE) = Net Income / Ending Stockholders Equity

ACQUISITIONS and GOODWILL

Entire acquisition payment is added to acquirer's balance sheet, distributed by:

1. **Fair value of net assets** (assets minus liabilities) (separable and tangible)
2. **Identifiable intangibles** (separable but intangible – could be sold alone) e.g., Customer lists, customer relationships, patents, other saleable technologies; NOT: an assembled workforce
3. **Goodwill** (not separable and intangible – cannot be sold alone)

Goodwill impairment = Reduction in value of goodwill (lower of cost or market)
Step 1: Compare the fair value of business unit to the book value of that unit.
Step 2: Compare implied fair value of the goodwill to book value of goodwill.

Company writes down the value of goodwill and recognizes loss in IS
*-If **Market value of asset < its book value**, then firm must (a) reduce book value of asset, and recognize corresponding loss in the income statement*
*-If **Market value of asset > book value**, no accounting transaction recorded*
For inventory and PPE, use lower of cost or market

MARKETABLE SECURITIES

Stock = equity; bond = debt

	Term	Value on BS	Impact to IS	Type
Held to Mature	Long	Original Value	(-) Dividend	D
Trading Sec.	Short	Original Value +/- ΔFV	(-) Dividend +/- ΔFV	D or E
Avail. For Sale	Other	Original Value +/- ΔFV (OCI)	(-) Dividend	D

	Trading Security	Available for Sale
Buy	-Cash +MktSec	-Cash +MktSec
Interest	+Cash = +R/E	+Cash = +R/E
Value up	+MktSec = +R/E	+MktSec = +OCI (Unrealized)
Value down	-MktSec = -R/E	-MktSec = -OCI (Unrealized)
Sell	+Cash -MktSec = +/-R/E	+Cash –MktSec = +/-OCT +/-R/E (Realized)

Record in AOCI (E/S)

LIFO vs. FIFO Example *QMart is a retail merchandiser. In 2014, QMart reports cost of goods sold **(COGS) of $32,558, on total sales of $63,112.** On analyzing QMart's financial statements for 2014, you find the following footnote: "Inventories are stated at lower of cost or market. The last-in-first-out method is used to determine the value of all its inventories.*

QMart's main competitor LMart uses FIFO for its inventory. LMart's reported cost of goods sold during 2014 equals $78,899, on total sales of $153,009. Calculate fiscal 2014 comparable gross margin percentages for LMart and QMart. *Gross Margin % = (Sales – COGS) / Sales . Lmart FIFO GM% = (153,009 – 78,899) / 153,009 = **0.48** Must figure out FIFO for Qmart*
FIFO COGS = LIFO COGS – CHANGE IN LIFO RESERVE
FIFO COGS = 32,588 – (821 – 314) = 32,080
*Qmart FIFO GM% = (63,112 – 32,080) / 63,112 = **0.49***

5. **What is QMart's inventory turnover ratio under LIFO? What is it under FIFO?**
Inventory Turnover = COGS / Average Inventory
We solved for Qmart COGS under FIFO in previous problem (32,080).
LIFO COGS are stated as 32,558.
Must solve for Average Inventory: (2014 Inv + 2013 Inv) / 2
LIFO Average Inv = (10,121 + 9,104) / 2 = 9,612.5
FIFO Average Inv = ((10,121 + 821) + (9,104 + 314)) / 2 = 10,180

6. **How much did QMart reduce its income taxes payable over the life of its operations by using LIFO instead of FIFO?**
Assume a constant tax rate of 30%. *Use the most recent LIFO Reserve to calculate. LIFO Reserve (2014) * 0.3 = 821 * 0.3 = **246.3***

REVENUE RECOGNITION EXAMPLE

Software bundle sells for 125K include license (120K Retail), 12 Training Sessions (18K) and 3Y support (12K). Record the sale of this bundle
1. Allocate price or each good: license = 125*120/(120+12+18) = 100K; repeat using formula allocated price = bundle price x retail price/retail price of all goods: Train = 15K Support = 10K
Record Sale in BSE: Cash(A) = Deferred Rev (L) + Retained Earnings (E)
+125K = +15K Training +10K Support + +100K License Revenue

After one year, 6 people trained. Record transactions in BSE
A = Deferred Revenue (L) + Retained Earnings (E)
-15*(6/12) = -7.5K Training | +7.5K Training Revenue
-10*(1/3) = -3.3K Support | +3.3K Support Revenue

UNREDEEMED GIFT CARDS: Sits in unearned revenue until card expires and rev is recognized OR Company makes an estimate based on historical usage of how much the remainder of the card would not be used and recognize revenue at that point

VW R&D Costs	2022
Total R&D Costs:	18,908
of which: capitalized D costs:	9,723
R&D costs recognized in profit/loss:	9,185

if Volkswagen instead followed U.S. GAAP, what transaction would they have had to record for research related activities for the fiscal year ending 12/31/2022?

```
Cash + Dev Asset - AccAmtz = R/E(SE)
-18,908                      -18,908(R&D Exp)
```

Statement of Cash Flows

- 3 sections >> Sum to actual change in cash during the year
  1)Operating: Primary business activities
  Selling goods or rendering services
  'Other' non-investing/financing (e.g., interest on loans paid)
  2)Investing: Acquiring and selling productive assets
  -Acquisitions and disposal of PPE
  -Purchase/sale of securities: other firms' stock or bonds
  3)Financing: Related to external sources of financing
  -Issuing stock or bonds, retiring stock or bonds
  -Payment of dividends and settling of bonds payable

Goal: Arrive at CFO, starting from NI

	NI	CFO	Adjust. to NI (CFO - NI)
1. Incur $100 in depreciation expense.	-100	0	+100
2. Sell $200 PPE with $100 acc. dep. for $200.	+100	0	-100
3. Sell $100 on account (ignore COGS).	+100	0	-100
4. Collect $100 from an old account receivable.	0	+100	+100
5. Receive $100 for goods to be delivered next yr.	0	+100	+100
6. Deliver $100 in goods, not paid (ignore COGS).	+100	0	-100

Selling PPE is an investing cash flow

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- **Operating Cash Flow (CFO) = Net Income – Accruals**
- **Working Capital** = Current Assets – Current Liabilities
- **Non-Cash Working Capital = Current Assets - Cash - Current Liabilities**
- **Indirect Method to arrive at CFO (Operating Cash Flow)**

1) Start with Net Income
2) **Add non-cash expenses:** expenses that reduce NI but did not require cash (e.g., depreciation expense, stock compensation)
3) **Add/Subtract:** any gains or losses associated with investing activities (e.g., PP&E disposal)
4) **Add/Subtract**: changes in non-cash working capital accounts -> Arrive at CFO

Intangibles:

*** If company has a large discrepancy between market cap and book value -> Intangible assets (e.g., Intellectual property, Brand, Human capital, Loyalty)**
*** Under GAAP, R&D expenditures are expensed (opposed to capitalized and put on B/S as assets). Two exceptions: (1) Certain software dev; (2) Acquired R&D**
*** Capitalizing software dev (SFAF 86) – Costs are recognized as R&D expenses that decrease income until "Tech feasibility" (completion of a detailed/working model). Once its achieved, costs are capitalized and expensed over useful life -> Amortization**
*** How to justify expenses over capitalizing? (1) tech feasibility happen very late; (2) useful life is very short; (3) Room for discretion: when is tech feasibility/amount of useful life**
*** Intangible assets are largely unrecognized on B/S except from software dev. after "tech feasibility" and acquired intangible assets**
*** Amortization for intangible assets is similar to Depreciation of tangible assets -> reduce value of asset on B/S and reduce R/E on the I/S**

On 12/31/2022, Apple uses cash to purchase two securities each costing $5 million. One is an equity security and the other is a debt security. They classify the debt security as available for sale and the equity security as trading. Assume the debt security does not pay interest and the equity security does not pay dividends.

```
Cash  MktbleSecDebt MktbleSecEquity = L + SE
-10M     5.0 M         5.0 M
```

On 3/31/2023 each security has depreciated in value by $1.5 million.

```
Cash  MktbleSecDebt MktbleSecEquity = (L) + OCI(SE) + R/E(SE)
                        -1.5 M                   -1.5M (Unrealized loss)
         -1.5M                         -1.5M
```

On 6/30/2023 each security has increased in value by $0.8 million from the 3/31/2023 value.

```
Cash  MktbleSecDebt MktbleSecEquity = (L) + OCI(SE) + R/E(SE)
                        0.8 M                    0.8M (Unrealized gain)
         0.8M                          0.8M
```

Suppose that on 7/1/2023, Apple wants to sell one of the two securities for $4.3 million. Which of the two should it sell to maximize net income for the quarter ending 6/30/2023? Please provide one or two sentences supporting your answer. Assume they mark the security to market before selling it.

```
Sell the Equity security—the realized gain will be 0. For the AFS, there
will be an $700k loss.
```

Assuming all R&D activity is paid for in cash, what transaction did Volkswagen record for the expenses on the income statement for Research Costs for the fiscal year ending 12/31/2022?

```
Cash   = R/E(SE)
-9,185  -9,185 (R&D Exp)
```

what transactions did Volkswagen record for Development Costs and the related amortization expense for the fiscal year ending 12/31/2022?

```
Cash + Dev Asset - AccAmtz = R/E(SE)
-9,723  -9,723
                 5,144      -5,144(Amtz Exp)
5,144: Capitalized development costs for products
currently in use --> Additions to cumulative amortization
```