A: Assets, D: Debt, E: Equity, NWC: Net Working Capital, R: Revenue

Basics

Assets = Debt(Liabilities) + Equity $\iff$ A = D + E

Income = Revenue - Expenses

Net Working Capital = (Current Assets) - (Current Liabilities) $\iff$ NWC = CA - CL

CashFlow(Assets) = CashFlow(Creditors) + CashFlow(Stockholders) $\iff$ CF(A) = CF(B) + CF(S)

Operating Cashflow = (Net Income) + Depreciation + (ΔNWC) $\iff$ OCF = EBIT + Depreciation - Taxes

Liquidity Ratios

Current Ratio = (Current Assets)/(Current Liabilities) $\iff$ CR = CA/CL

Quick Ratio = (Current Assets - Inventory)/(Current Liabilities) $\iff$ CR = (CA - Inv)/CL

Cash Ratio = Cash/(Current Liabilities) $\iff$ Cash/CL

Leverage Ratios

Total Debt Ratio = (Assets - Equity)/Assets $\iff$ TDR = (A - E)/A

Debt/Equity Ratio = Debt/Equity $\iff$ D/E

Equity Mulitplier = Assets/Equity $\iff$ 1 + Debt/Equity $\iff$ EM = A/E $\iff$ 1 + D/E

Coverage Ratios

Times Interest Earned = (Earnings Before Interest and Taxes)/Interst $\iff$ TIE = EBIT/Interest

Cash Coverage = (EBIT + Depreciation + Amortization)/Interest

Ratio Analysis

Inventory Turnover = Cost of Goods Sold/Inventory $\iff$ IT = COGS/Inventory

Days' Sales in Inventory = 365/(Inventory Turnover) $\iff$ DSI = 365/IT

Receivables Ratios

Receivables Turnover = Sales/(Accounts Receivable) $\iff$ RT = S/AR

Days' Sales in Receivables = 365/(Receivables Turnover) $\iff$ DSR = 365/RT

Total Asset Turnover = Sales/(Total Assets) $\iff$ TAT = S/A

Profitability Ratios

Profit Margin = (Net Income)/Sales $\iff$ PM = NI/S

Return on Assets = (Net Income)/(Total Assets) $\iff$ ROA = NI/A

Return on Equity = (Net Income)/(Total Equity) $\iff$ ROE = NI/E

Market Value Measures

Earnings Per Share = (Net Income)/(Shares Outstanding) $\iff$ EPS = NI/SO

Price-to-Earnings Ratio = (Price per Share)/(Earnings per Share) $\iff$ PE Ratio = PPS/EPS

Market Capitalization = (PPS)$\cdot$(Shares Outstanding)

Dividend Ratios

Dividend Payout Ratio = (Dividends Paid)/Net Income = d

Retention Ratio = 1 - (Dividends Paid)/Net Income $\iff$ $b = 1 - d$

Du-Pont Identity

ROE = $\frac{NI}{S} \cdot \frac{S}{A} \cdot \frac{A}{E}$ PM$\cdot$TAT$\cdot$EM

Pro Forma Income Statement for year n

(Projected) Sales_n = $\text{Sales}_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Cost of Goods Sold})_n$ = $(\text{Cost of Goods Sold})_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Taxable Income})_n$ = Sales_n - Costs_n - Interest_n

(Projected) Interest_n = Interest_{n-1} + (Interest Rate)$\cdot$D

(Projected) Taxes_n = (Tax Rate)$\cdot(\text{Taxable Income})_n$

(Projected) $(\text{Net Income})_n$ = $(\text{Taxable Income}_n)$ - Taxes_n

(Projected) Dividends_n = $(\text{Net Income})_n\cdot$(Dividend Payout Ratio)

(Projected) $(\text{Addition to Retained Earnings})_n$ = (Net Income_n) - Dividends_n = (ΔRetained Earnings)

Pro Forma Balance Sheet for year n

(Projected) Cash_n = $\text{Cash}_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Accounts Receivable})_n$ = $(\text{Accounts Receivable})_{n-1}\cdot$(1 + Growth Rate)

(Projected) Inventory_n = $\text{Inventory}_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Net Fixed Assets})_n$ = $(\text{Net Fixed Assets})_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Accounts Payable})_n$ = $(\text{Accounts Payable})_{n-1}\cdot$(1 + Growth Rate)

(Projected) $(\text{Notes Payable})_n$ = $(\text{Notes Payable})_{n-1}$ + D

(Projected) $(\text{Long Term Debt})_n$ = $(\text{Long Term Debt})_{n-1}$ + D

(Projected) $(\text{Stock})_n$ = $(\text{Stock})_{n-1}$ - (Buy Backs)

(Projected) $(\text{Retained Earnings})_n$ = $(\text{Retained Earnings})_{n-1}$ + ΔRetained Earnings

Solve for D *by setting Total Assets = Total Liabilities*

The example in the pro forma worksheet said to assume that NWC *stays the same*

External Financing Needed (EFN)

EFN = (Projected Total Assets) - (Spontaneous ΔLiabilities) - (ΔRetained Earnings)

EFN $>$ 0 ? "External financing needed" : "Company has excess funds"

Growth Rate

Internal Groth Rate = (ROA$\cdot b$)/(1 - ROA$\cdot b$) = IGR

Sustainable Groth Rate = (ROE$\cdot b$)/(1 - ROE$\cdot b$) = SGR

Assuming a constant growth in Sales and COGS of 25% *(i)*, $d = \frac{1}{3}$($\implies$ $b = \frac{2}{3}$), and a constant NWC *(ii)*, we get:

Pro Forma Income Statement	**2013**	**% of Sales**	**2014 (Projected)**
Sales	1000	80%	$1000 \cdot 1.25 = 1250^*$
Costs	800	80%	$800 \cdot 1.25 = 1000^*$
Taxable Income	200	20%	$1250 - 1000 - 0 = 250^\gamma$
Taxes(34%)	68	6.8%	$0.34 \cdot 250 = 85^\gamma$
Net Income	132	13.2%	$250 - 85 = 165^\gamma$
Dividends	44	4.4%	$165 \cdot \frac{1}{3} = 55^\gamma$
Additions to Retained Earnings	88	8.8%	$165 - 55 = 110^\gamma$

Pro Forma Balance Sheet

Assets

	2013	**% of Sales**	**2014 (Projected)**
Current Assets			
Cash	160	16%	$160 \cdot 1.25 = 200^*$
Accounts Receivable	440	44%	$440 \cdot 1.25 = 550^*$
Inventory	600	60%	$600 \cdot 1.25 = 750^*$
Total Current Assets	1200	120%	$1200 \cdot 1.25 = 1500^*$
Net Fixed Assets	1800	180%	$1800 \cdot 1.25 = 2250^*$
Total Assets	3000	300%	$3000 \cdot 1.25 = 3750^*$

Liabilities

	2013	**% of Sales**	**1st Step**	**2014 (Projected)**
Current Liabilities				
Accounts Payable	300	30%	$300 \cdot 1.25 = 375^*$	$300 \cdot 1.25 = 375^*$
Notes Payable	100	n/a	100	325^α
Total Current Liabilities	1200	120%	1500	700^α
Long-Term Debt	800	n/a	800	1140^β
Owners' Equity				
Stock	800	n/a	800	800^γ
Retained Earnings	1000	n/a	$1000 + 110 = 1110$	$1000 + 110 = 1110^\gamma$
Total Liabilities and O.E.	3000	n/a	3185	3750

*: By *(i)*, we have that (Growth Rate) $= 0.25 \implies (*)_{2014} = *\cdot 1.25$.

α: By *(ii)*, we get $1200 - 400 = 800 \implies 1500 - CL_{2014} = 800 \implies CL_{2014} = 700$ and (Notes Payable) $= 700 - 375 = 325$.

β: We have that $(\text{Total Assets})_{2014} = 3750 \implies 3750 = CL_{2014} + LTD_{2014} + OE_{2014} \implies LTD_{2014} = 3750 - 700 - 1910 = 1140$.

γ: The rest of the entries in the table are filled out using the equations from **Pro Forma * for year** n.