- Net Working Capital = (Current Assets – Current Liabilities) (New) – (Current Assets – Current Liabilities) (Old)
- Net Income = Revenues – Expenses
- Retained Earnings = Net Income – Dividends
- Cash Flow from Assets = $ Flow from Bondholders $ Flow to Shareholders
    - Free Cash Flow = Cash Flow from Assets
- Additions to NWC = NWC End – NWC Beg.
- Cash Flow Creditors = Interest Paid – Net New Borrowing (New LTD – Old LTD)
- Cash Flow from Shareholders = Dividends Paid – Net New Equity Raised (New CS – Old CS)
- Total $ Flow from Assets = $ Invested Fixed Assets - $ Invested in NWC
- Average Tax Rate = Total Taxes Paid / Total Taxable Income
- Operating Cash Flow = Net Income + Depreciation + Interest Paid
- Net Capital Spending = Ending Net Fixed Assets – Beginning Net Fixed Assets + Depreciation
- **I. Short-Term Solvency or Liquidity Ratios**

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$
$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$$
$$\text{Cash ratio} = \frac{\text{Cash}}{\text{Current liabilities}}$$
$$\text{Net working capital} = \frac{\text{Net working capital}}{\text{Total assets}}$$
$$\text{Interval measure} = \frac{\text{Current assets}}{\text{Average daily operating costs}}$$

- **II. Long-Term Solvency or Financial Leverage Ratios**

$$\text{Total debt ratio} = \frac{\text{Total assets} - \text{Total equity}}{\text{Total assets}}$$
$$\text{Debt/equity ratio} = \frac{\text{Total debt}}{\text{Total equity}}$$
$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total equity}}$$
$$\text{Long-term debt ratio} = \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Total equity}}$$
$$\text{Times interest earned} = \frac{\text{EBIT}}{\text{Interest}}$$
$$\text{Cash coverage ratio} = \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$$

- **III. Asset Utilization Turnover Ratios**

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$
$$\text{Days' sales in inventory} = \frac{365 \text{ days}}{\text{Inventory turnover}}$$
$$\text{Receivables turnover} = \frac{\text{Sales}}{\text{Accounts receivable}}$$
$$\text{Days' sales in receivables} = \frac{365 \text{ days}}{\text{Receivables turnover}}$$
$$\text{NWC turnover} = \frac{\text{Sales}}{\text{NWC}}$$
$$\text{Fixed asset turnover} = \frac{\text{Sales}}{\text{Net fixed assets}}$$
$$\text{Total asset turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

- **IV. Profitability Ratios**

$$\text{Profit margin} = \frac{\text{Net income}}{\text{Sales}}$$
$$\text{Return on assets (ROA)} = \frac{\text{Net income}}{\text{Total assets}}$$
$$\text{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Total equity}}$$

- **V. Market Value Ratios**

$$\text{Price-earning ratio} = \frac{\text{Price per share}}{\text{Earnings per share}}$$
$$\text{Market-to-book ratio} = \frac{\text{Market value per share}}{\text{Book value per share}}$$
$$\text{EV/EBITDA} = [\text{Market value of equity} + \text{Market value of interest-bearing debt} + \text{Preferred shares} + \text{Minority interest} - \text{Cash (and cash equivalent)}]/\text{EBITDA}$$

- Gross Profit Margin = (Sales – COGS) / Sales
- Operating Profit Margin = (Sales – COGS – Operating Expenses) / Sales
- Du Pont Identity
    - How ROE is linked with ROA
        - ROE = Net income / Equity
        - = Net Income / Equity x Assets / Assets
        - = Net Income / Assets x Assets / Equity
        - = ROA x Equity Multiplier
        - = ROA x (1 + Debt/Equity Ratio)
    - The Du Pont Identity is the popular expression that breaks ROE into three parts
        - ROE = Net Income
        - = Net Income / Equity x Assets / Assets x Sales / Sales
        - = Net Income / Sales x Sales / Assets x Assets / Equity
        - = Profit Margin x Total Asset Turnover x Equity Multiplier
    - The Du Pont identity tells us that ROE is affected by three things: operating efficiency, asset use efficiency, and financial leverage
- ROA = Profit Margin x Total Asset Turnover
- Dividend Payout Ratio = Cash Dividends / Net Income
- Retention/Plowback Ratio = Retained Earnings / Net Income = 1 – D/P Ratio
- Capital Intensity Ratio = Total Assets / Total Sales = 1 / Total Asset Turnover
- Internal Growth Rate (g) = (ROA x R) / (1 – ROA x R)

- Sustainable Growth Rate (g*) = (ROE x R) / (1 – ROE x R)
- Debt/Equity Ratio = New Borrowing / Addition to Retained Earnings
- Simple Interest
  - FV = PV x (1 + rt)
- Compounded Interest
  - FV = PV x (1+ r)^t
  - PV = FV x (1/(1 + r)^t)
- Annuities
  - FVA = C x ((1 + r)^t – 1) / r)
  - PVA = C x (1 – (1 / (1 + r)^t) / r)
- Regular Perpetuity
  - PV = C / r
- Growing Perpetuity
  - PV = C / r – g
- Growing Annuity
  - PV = (C / r – g) x (1 – ((1 + g) / (1 + r))^t)
- FV annuity due = FV Ordinary Annuity x (1+r)
- PV annuity due = C x PV Ordinary Annuity

- Annual Percentage Rate (APR)
  - Interest rate that is annualized using simple interest
  - APR = interest rate / period x number of periods
  - Required way of describing interest rates by lending laws in Canada
  - Quoted rate, not actual interest rate
  - APR = EPR x m
- Effective Annual Rate (EAR)
  - Interest rate that is annualized using compound interest
  - Actual interest rate
  - 1 + EAR = (1 + APR / m)^m
- Effective Periodic Rate (EPR)
  - Actual periodic interest rate
  - At the same frequency as payments, not necessarily at the same frequency as compounding (e.g. Canadian mortgage monthly payments & semi-annual compounding)
  - EPR = APR / m
- Example
  - Which of the following is the best if you are thinking of opening a saving account? Bank A gives you 15% compounded daily, Bank B gives 15.5% compounded quarterly, and Bank C gives 16% compounded annually.
  - Answers
    - EAR for Bank C: = 16% = APR (Compounded Annually)
    - EAR for Bank A: = (1+APR/m)^m-1 = (1+15%/365)^365-1 = 16.179%
    - EAR for Bank B: = (1+APR/m)^m-1 = (1+15.5%/4)^4-1 = 16.42%
- External Financing Needed = Increase in Total Assets – Increase in A/P + Addition to Retained Earnings
- Increase in Total Assets = A x g
- Addition to Retained Earnings = psR x (1 + g)
- Increase in Accounts Payable = Accounts Payable x g
  - s (Previous Years' Sales)
  - A (Total Assets)
  - p (Profit Margin)
  - R (Retention Ratio)
  - G (Growth Rate in Sales)
- Annual Loan Payment = (C x r) / (1 – (1 / (1 + r)^n))
- Paid Out in Total = PMT x t
- Paid Down Principal = PV – Outstanding Balance
- Interest Paid = Paid Out Total – Paid Down Principal
- Full Sales Capacity = Current Sales / Operating Percentage of Company