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Earnings Credit

CHAPTER 7, TOPIC 2

FORMULA

$$= CB * (1 - RR) * ECR\left(\frac{D}{365}\right)$$

Where:

CB = Average Collected Balances

RR = Reserve Requirement

ECR = Earnings Credit Rate

D = Number of Days in the Month

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Average Collected Balances Required

CHAPTER 7, TOPIC 2

FORMULA

$$= \frac{SC}{ECR\left(\frac{D}{365}\right) * (1 - RR)}$$

Where:

SC = Service Provider Charges

RR = Reserve Requirement

ECR = Earnings Credit Rate

D = Number of Days in the Month

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Balance Sheet Equation

CHAPTER 8, TOPIC 4

FORMULA

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' Equity}$$

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Future Value (FV)

CHAPTER 9, TOPIC 2

FORMULA

$$= PV(1 + i)^n$$

Where:

PV = Present Value

i = Annual Investment Rate

n = Number of Periods

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Present Value (PV)

CHAPTER 9, TOPIC 2

FORMULA

$$= \frac{FV}{(1+i)^n} \quad \text{or} \quad FV * \left(\frac{1}{(1+i)^n} \right)$$

Where:

FV = Future Value

i = Annual Investment Rate

n = Number of Periods

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Present Value (PV) of a Stream of Payments

CHAPTER 9, TOPIC 2

FORMULA

$$= \frac{C_1}{(1+i)^1} + \frac{C_2}{(1+i)^2} + \cdots + \frac{C_n}{(1+i)^n}$$

Where:

C_n = Cash flow C in time period n

n = Number of Periods

i = Periodic Investment Rate or Discount Rate

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Future Value (FV) for Investment Periods Less Than 1 Year

CHAPTER 9, TOPIC 2

FORMULA

$$= PV \left(1 + (\text{Days}) \left(\frac{i}{\text{Days in a Year}} \right) \right)$$

Where:

PV = Present Value

i = Annual Investment Rate

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Present Value (PV) for Investment Periods Less Than 1 Year

CHAPTER 9, TOPIC 2

FORMULA

$$= \frac{FV}{\left(1 + (\text{Days}) \left(\frac{i}{\text{Days in a Year}} \right) \right)}$$

Where:

FV = Future Value

i = Annual Investment Rate

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After-Tax Cost of Debt

CHAPTER 9, TOPIC 3

FORMULA

$$= r_D(1 - T)$$

Where:

r_D = Yield to maturity on newly issued debt on a before-tax basis

T = Firm's marginal income tax rate

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Capital Asset Pricing Model (CAPM)

CHAPTER 9, TOPIC 3

FORMULA

$$= r_{RF} + (r_M - r_{RF})\beta$$

Where:

r_{RF} = Expected return on the risk-free rate

r_M = Expected return on the market portfolio

β = Beta value for the company's stock

i = Annual Investment Rate

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Weighted Average Cost of Capital (WACC)

CHAPTER 9, TOPIC 3

FORMULA

$$= w_D r_D(1 - T) + w_E r_E$$

Where:

W_D = Weighting of debt financing

r_D = Yield to maturity on newly issued debt on a before-tax basis

T = Firm's marginal tax rate

W_E = Weighting of equity financing

r_E = Required rate of return on equity

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Economic Value Added (EVA)

CHAPTER 9, TOPIC 3

FORMULA

$$= EBIT(1 - T) - (WACC)(\text{Long term Debt} + \text{Equity})$$

Where:

$EBIT$ = Earnings before Interest and Tax

T = Firm's marginal tax rate

$WACC$ = Weighted average cost of capital

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Net Present Value (NPV)

CHAPTER 9, TOPIC 3

FORMULA

$$= \frac{C_1}{(1+i)^1} + \frac{C_2}{(1+i)^2} + \frac{C_3}{(1+i)^3} + \cdots + \frac{C_n}{(1+i)^n} - \text{Cost}$$

Where:

C = Net cash flow in a given year n

i = WACC or discount rate

Cost = Cash outflow

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Profitability Index (PI)

CHAPTER 9, TOPIC 3

FORMULA

$$= \frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$$

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Break-Even Quantity

CHAPTER 9, TOPIC 5

FORMULA

$$= \frac{\text{Fixed Costs}}{\text{Selling Price per Unit} - \text{Variable Cost per Unit}}$$

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Degree of Total Leverage

CHAPTER 9, TOPIC 5

FORMULA

$$= \frac{\% \text{ Change in Net Income}}{\% \text{ Change in Sales}}$$

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Degree of Operating Leverage

CHAPTER 9, TOPIC 5

FORMULA

$$= \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}}$$

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Degree of Financial Leverage

CHAPTER 9, TOPIC 5

FORMULA

$$= \frac{\% \text{ Change in Net Income}}{\% \text{ Change in EBIT}}$$

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Total Asset Turnover

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Revenue}}{\text{Total Assets}}$$

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Fixed Asset Turnover

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Revenue}}{\text{Net Property, Plant and Equipment}}$$

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Current Asset Turnover

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Revenue}}{\text{Current Assets}}$$

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Cash Conversion Efficiency

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Cash Flow from Operations}}{\text{Revenues}}$$

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Total Liabilities to Total Assets

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

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Long-term Debt to Capital

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Long term Debt}}{\text{Long term Debt} + \text{Equity}}$$

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Debt to Equity

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Total Debt}}{\text{Total Equity}}$$

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Debt to Tangible Net Worth

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FORMULA

$$= \frac{\text{Total Debt}}{\text{Total Equity} - \text{Intangible Assets}}$$

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Times Interest Earned

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FORMULA

$$= \frac{\text{EBIT}}{\text{Interest Expense}}$$

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Fixed-Charge Coverage Ratio

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FORMULA

$$= \frac{\text{EBIT} + \text{Fixed Charges}}{\text{Interest Expense} + \text{Fixed Charges}}$$

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Gross Profit Margin

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FORMULA

$$= \frac{\text{Gross Profit}}{\text{Revenues}}$$

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EBITDA Margin

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FORMULA

$$= \frac{\text{EBITDA}}{\text{Revenues}}$$

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Operating Profit Margin

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{EBIT}}{\text{Revenues}}$$

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Net Profit Margin

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FORMULA

$$= \frac{\text{Net Income}}{\text{Revenues}}$$

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Return on Assets (ROA)

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Net Income}}{\text{Total Assets}}$$

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Return on Equity (ROE)

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Net Income}}{\text{Total Equity}}$$

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Return on Common Equity (ROCE)

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FORMULA

$$= \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Total Equity} - \text{Preferred Equity}}$$

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Return on Invested Capital (ROIC)

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FORMULA

$$= \frac{\text{Net Income}}{\text{Long term Debt} + \text{Equity}}$$

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Residual Income (RI)

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FORMULA

$$= \text{Net Income} - (\text{Invested Capital} * \text{Cost of Capital})$$

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Free Cash Flow (FCF)

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FORMULA

$$= \text{Cash Flow from Operating Activities} - \text{Capital Expenditures}$$

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Free Cash Flow to the Firm (FCFF)

CHAPTER 9, TOPIC 6

FORMULA

$$= \text{Cash Flow from Operating Activities} + [\text{Interest Expense} * (1 - \text{Tax Rate})] - \text{Capital Expenditures}$$

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Free Cash Flow to Equity (FCFE)

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FORMULA

$$= \text{FCFF} - [\text{Interest Expense} * (1 - \text{Tax Rate})] + \text{Change in Total Debt}$$

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DuPont Approach

CHAPTER 9, TOPIC 6

FORMULA

$$= \frac{\text{Net Income}}{\text{Revenues}} * \frac{\text{Revenues}}{\text{Average Total Assets}} * \frac{\text{Average Total Assets}}{\text{Average Equity}}$$

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Net Working Capital

CHAPTER 11, TOPIC 2

FORMULA

$$= \text{Current Assets} - \text{Current Liabilities}$$

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Current Ratio

CHAPTER 11, TOPIC 2

FORMULA

$$= \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

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Quick Ratio

CHAPTER 11, TOPIC 2

FORMULA

$$= \frac{\text{Cash} + \text{Short term Investments} + \text{Accounts Receivable}}{\text{Total Current Liabilities}}$$

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Days Cash Held

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FORMULA

$$= \frac{Cash}{\left(\frac{Operating\ Expenses - Noncash\ Expenses}{365}\right)}$$

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Days Inventory (DI)

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FORMULA

$$= \frac{Inventory}{Cost\ of\ Goods\ Sold} * 365$$

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Days Receivables (DR)

CHAPTER 11, TOPIC 3

FORMULA

$$= \frac{Accounts\ Receivable}{Revenue} * 365$$

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Days Payables (DP)

CHAPTER 11, TOPIC 3

FORMULA

$$= \frac{Accounts\ Payable}{Cost\ of\ Goods\ Sold} * 365$$

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Cash Conversion Cycle (CCC)

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FORMULA

$$= \text{Days Inventory} + \text{Days Receivables} - \text{Days Payables}$$

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Cash Turnover

CHAPTER 11, TOPIC 3

FORMULA

$$= \frac{365}{\text{Cash Conversion Cycle}}$$

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Annualized Cost of Forgoing the Trade Credit Discount

CHAPTER 11, TOPIC 4

FORMULA

$$= \frac{D}{100 - D} * \frac{365}{N - T}$$

Where:

D = Discount percentage

N = Net period (in days)

T = Discount period (in days)

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Break Even Point for Delaying Payment to Supplier

CHAPTER 11, TOPIC 4

FORMULA

$$C = \frac{D}{100 - D} * \frac{365}{B - T}$$

Where:

C = Company's cost of funds

D = Discount percentage

B = Break-even point (in days)

T = Discount period (in days)

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Net Benefit of Offering a Trade Credit Discount

CHAPTER 11, TOPIC 4

FORMULA

$$= \frac{\text{Credit Sale} * (1 - D)}{1 + \left(T * \frac{C}{365}\right)} - \frac{\text{Credit Sale}}{1 + \left(N * \frac{C}{365}\right)}$$

Where:

C = Company's cost of funds

D = Discount percentage

N = Net period (in days)

T = Discount period (in days)

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Days Sales Outstanding (DSO)

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FORMULA

$$= \frac{\text{Accounts Receivable}}{\text{Average Daily Credit Sales for Period}}$$

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Average Past Due

CHAPTER 11, TOPIC 5

FORMULA

$$= \text{DSO} - \text{Average Days of Credit Terms}$$

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Discount

CHAPTER 12, TOPIC 3

FORMULA

$$= 1 - \frac{1}{1 + TD\left(\frac{r}{365}\right)}$$

Where:

TD = Total days' difference between check and electronic payments

r = Annual opportunity cost rate

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Break Even Wire Transfer Amount

CHAPTER 12, TOPIC 4

FORMULA

$$= \frac{\text{Wire Cost} - \text{ACH Cost}}{\text{Days Accelerated} * \left(\frac{\text{Opportunity Cost}}{365 \text{ Days}}\right)}$$

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Taxable Equivalent Yield

CHAPTER 13, TOPIC 3

FORMULA

$$= \frac{\text{Tax Exempt Yield}}{1 - \text{Marginal Tax Rate}}$$

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After-Tax Yield

CHAPTER 13, TOPIC 3

FORMULA

$$= \text{Taxable Yield} * (1 - \text{Marginal Tax Rate})$$

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Holding Period Yield

CHAPTER 13, TOPIC 3

FORMULA

$$= \frac{\text{Cash Received at Maturity} - \text{Amount Invested}}{\text{Amount Invested}}$$

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Money Market Yield (MMY)

CHAPTER 13, TOPIC 3

FORMULA

$$= \left(\frac{\text{Cash Received at Maturity} - \text{Amount Invested}}{\text{Amount Invested}} \right) * \left(\frac{360}{\text{Days to Maturity}} \right)$$

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Bond Equivalent Yield (BEY)

CHAPTER 13, TOPIC 3

FORMULA

$$= \left(\frac{\text{Cash Received at Maturity} - \text{Amount Invested}}{\text{Amount Invested}} \right) * \left(\frac{365}{\text{Days to Maturity}} \right)$$

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Discount Rate

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FORMULA

$$= \left(\frac{\text{Dollar Discount}}{\text{Par Value}} \right) * \left(\frac{360}{\text{Days to Maturity}} \right)$$

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Dollar Discount

CHAPTER 13, TOPIC 3

FORMULA

$$= \text{Discount Rate} * \text{Par Value} * \left(\frac{\text{Days to Maturity}}{360} \right)$$

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Purchase Price

CHAPTER 13, TOPIC 3

FORMULA

$$= \text{Par Value} - \text{Dollar Discount}$$

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Commercial Paper Usable Funds

CHAPTER 13, TOPIC 4

FORMULA

$$= \text{Par Value} - \text{Dollar Discount}$$

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Prorated Dealer Fee

CHAPTER 13, TOPIC 4

FORMULA

$$= \text{Annual Dealer Fee Rate} * \text{CP Issue Size} * \left(\frac{\text{Days to Maturity}}{360}\right)$$

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Prorated Backup LC Fee

CHAPTER 13, TOPIC 4

FORMULA

$$= \text{Annual Backup LC Fee Rate} * \text{CP Issue Size} * \left(\frac{\text{Days to Maturity}}{360}\right)$$

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Annualized Cost of CP

CHAPTER 13, TOPIC 4

FORMULA

$$= \left(\frac{\text{Dollar Discount} + \text{Dealer Fee} + \text{Backup LC Fee}}{\text{Usuable Funds}}\right) * \left(\frac{365}{\text{Days to Maturity}}\right)$$

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Commercial Paper Nominal Yield

CHAPTER 13, TOPIC 4

FORMULA

$$= \left(\frac{\text{Dollar Discount}}{\text{Purchase Price}}\right) * \left(\frac{365}{\text{Days to Maturity}}\right)$$

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Interest Paid

CHAPTER 13, TOPIC 4

FORMULA

$$= \text{Average Borrowings} * \text{All In Rate}$$

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Fee on Unused Portion

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FORMULA

$$= \text{Unused Portion} * \text{Commitment Fee}$$

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Annualized Cost of Line

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FORMULA

$$= \frac{\text{Interest} + \text{Fee on Unused Portion of Line}}{\text{Used Portion of Line}}$$

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Interest Rate Factors

CHAPTER 13, TOPIC 5

FORMULA

$$= r_{RF} + IP + DP + LP + MP$$

Where:

r_{RF} = Real risk-free rate of interest

IP = Inflation Premium

DP = Default Premium

LP = Liquidity Premium

MP = Maturity Premium

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Forecasting with Exponential Smoothing

CHAPTER 14, TOPIC 5

FORMULA

$$= \alpha X_t + (1 - \alpha)(F_t)$$

Where:

α = Smoothing constant

X_t = Actual cash flow for the current period

F_t = Cash flow forecast for the current period

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Cashflow at Risk (CaR)

CHAPTER 16, TOPIC 4

FORMULA

$$= 1.65 * \text{Standard Deviation (of annual cash flow)}$$

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FORMULA

Value at Risk (VaR)

$$= \text{Portfolio Value} * 1.65 * \text{Standard Deviation}$$

CHAPTER 16, TOPIC 4

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FORMULA

$$= (r_s - r_c) * \frac{d}{y} * \text{Notional Principal}$$

Where:

r_s = Settlement rate

r_c = Contract rate

d = Number of days in the period

y = number of days in the year

Derivative Interest Differential

CHAPTER 17, TOPIC 5

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FORMULA

$$= \frac{\text{Interest Differential}}{1 + \left(r_s * \frac{d}{y}\right)}$$

Where:

r_s = Settlement rate

d = Number of days in the period

y = number of days in the year

Derivative Settlement Amount

CHAPTER 17, TOPIC 5

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FORMULA

$$= \text{Spot Rate} * \left[\frac{1 + \left(r_v * \frac{d}{y}\right)}{1 + \left(r_b * \frac{d}{y}\right)}\right]$$

Where:

r_b = Base currency interest rate

r_v = Variable currency interest rate

d = Number of days in the period

y = number of days in the year

Forward Rate

CHAPTER 17, TOPIC 6

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Forward Points

CHAPTER 17, TOPIC 6

FORMULA

$$= (r_v - r_b) * \frac{d}{y} * \text{Spot rate} * 100$$

Where:

r_b = Base currency interest rate

r_v = Variable currency interest rate

d = Number of days in the period

y = number of days in the year

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Market Price of a Bond

CHAPTER 19, TOPIC 2

FORMULA

$$= \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \cdots + \frac{CF_N}{(1+k)^N}$$

Where:

CF_N = Annual cash flow produced by the security in year N

k = Required rate of return or opportunity cost for the security

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Price of Preferred Stock

CHAPTER 19, TOPIC 2

FORMULA

$$= \frac{\text{Annual Preferred Stock Dividend}}{\text{Required Rate of Return}}$$

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Price of Common Stock (Gordon Growth Model)

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FORMULA

$$= \frac{D_t(1+g)}{k-g}$$

Where:

D_t = Current dividend paid

g = Expected dividend growth rate

k = Required return on common equity

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FORMULA

Earnings Multiplier

$$= \frac{\text{Market Share Price}}{\text{Earnings Per Share}}$$

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FORMULA

Approximate % Change in Bond Price

$$= -\text{Duration} * \text{Change in interest rate}$$

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FORMULA

Portfolio Beta

$$= (\% \text{ of Co. X Stock} * \text{Co. X Beta}) + (\% \text{ of Co. Y Stock} * \text{Co. Y Beta})$$

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Portfolio Return

$$= (\% \text{ of Co. X Stock} * \text{Co. X Return}) + (\% \text{ of Co. Y Stock} * \text{Co. Y Return})$$

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