$$V = \frac{D_1}{r-g}$$

Intrinsic Value Formula (Valuation)
Calculates the value of a dividend paying security in dollar terms
D1 = next year's dividend
k = r = the rate of return required by the investor
g = the dividend growth rate or the company growth rate

$$r = \frac{D_1}{P} + g$$

Expected Rate of Return Formula
The rate an investor should expect based on price paid for a security
D1 = next year's dividend
P = market price paid for a security
g = the dividend growth rate or the company growth rate

$$COV_{ij} = \rho_{ij}\sigma_i\sigma_j$$

Covariance
Measures how one security behaves as a direct result of another
σi = standard deviation of security i
σj = standard deviation of security j
ρij = correlation between securities i and j

$$\sigma_p = \sqrt{W_i^2\sigma_i^2 + W_j^2\sigma_j^2 + 2W_iW_jCOV_{ij}}$$

Portfolio deviation formula
Standard deviation for a 2 stock portfolio
Wi = weight of stock 'i'
Wj = weight of stock 'j'
σi = standard deviation of stock 'i'
σj = standard deviation of stock 'j'
COVij = covariance between 'I' and 'j'

$$\beta_i = \frac{COV_{im}}{\sigma_m^2} = \frac{\rho_{im}\sigma_i}{\sigma_m}$$

Beta

Risk as a measure of volatility relative to that of the market

σi = standard deviation of the individual security

ρim = correlation between an individual security and the market

COVim = covariance between an individual security and the market

σm = standard deviation of the market

$$\sigma_r = \sqrt{\frac{\sum_{t=1}^{n}(r_t - \bar{r})^2}{n}}$$

Standard Deviation in a Population

Deviation of a single security over a series of periods of return

σr = standard deviation of results from the expected return

Σ = summation of all terms

n = number of periods being considered

rt = actual return

r̄ = average return

$$S_r = \sqrt{\frac{\sum_{t=1}^{n}(r_t - \bar{r})^2}{n-1}}$$

Standard Deviation of a Sample

Deviation of a single security over a series of periods of return

Sr = standard deviation of results from the expected return

Σ = summation of all terms

n = number of periods being considered

rt = actual return

r̄ = average return

$$r_i = r_f + (r_m - r_f)\beta_i$$

Capital Asset Pricing Model
Used to determine a theoretically appropriate required rate of return of an asset
ri = the investor's required rate of return
rf = risk free rate (T-Bill rate serves this end)
rm = return of the market (S&P 500 or some broad index)
βi = beta of the security being measured for required return

$$\alpha_p = \overline{r}_p - \left[\overline{r}_f + \left(\overline{r}_m - \overline{r}_f\right)\beta_p\right]$$

Jensen Model
Measures the performance of a portfolio manager to the market
αp = difference of return from amount required by investors
r̄p = return of the portfolio
r̄f = risk free rate of return
r̄m = return of the market
βp = beta of the portfolio being measured

$$T_p = \frac{\overline{r}_p - \overline{r}_f}{\beta_p}$$

Treynor Ratio
Measures the risk-adjusted performance of a portfolio manager
Tp = Treynor Index
rp = return of the portfolio
rf = risk free rate of return
βp = beta of the portfolio being measured

$$D = \frac{1+y}{y} - \frac{(1+y)+t(c-y)}{c\left[(1+y)^t - 1\right]+y}$$

Duration

The length of time the discounted cash flow of a bond remains outstanding

c = rate of interest paid on the coupon

t = number of periods to maturity

n = number of cash flows

i = interest or yield to maturity

y = Yield to Maturity (as a %)

c = rate of interest paid on the coupon

t = number of periods to maturity

$$\frac{\Delta P}{P} = -D\left[\frac{\Delta y}{1+y}\right]$$

Change of Bond Price

The change of price that will occur in a bond as interest rates change

ΔP = the dollar change in price

P = price of a bond

ΔP/P = % price change of bond

(-D) = the duration in terms of years used as a negative value

Δy = the % change in interest rates. If they go down this number should be negative

1+y = 1 + yield to maturity

$$IR = \frac{R_P - R_B}{\sigma_A}$$

Information Ratio

Measures return above benchmark divided by standard deviation

Rp = return of a portfolio

Rb = return of a benchmark

σA = tracking error of active return

$$EAR = (1 + \frac{i}{n})^n - 1$$

Effective Annual Return
Accounts for intra-year compounding
i = interest rate
n = number of periods

$$TEY = r/(1-t)$$

Taxable Equivalent Yield
Return that is required on a taxable investment to make it equal to the return on a tax-exempt investment
r = nominal rate of return
t investor's marginaltax rate (as a decimal)

$$AM = \frac{a_1 + a_2 + a_3 + \cdots + a_n}{n}$$

Arithmetic Mean
The average of a set of numerical values, calculated by adding them together and dividing by the number of terms in the set
a = rate of return for given period
n = number of periods

$$S_p = \frac{\overline{r}_p - \overline{r}_f}{\sigma_p}$$

Sharpe Ratio
Measures the risk-adjusted performance of a portfolio in terms of standard deviation
Sp = sharpe Index
$\overline{r}_p$ = return of the portfolio
$\overline{r}_f$ = risk free rate of return
σp = standard deviation of the portfolio being measured

$$ {}_1R_N = [(1+{}_1R_1)\,(1+E({}_2r_1))\ldots(1+E({}_Nr_1))]^{1/N} - 1 $$

Rate of return for period N

N = number of periods

1R1 = interest rate for period 1

E(2r1) = expected interest rate for period 2

E(Nr1) = expected interest rate for given period

$$ HPR = [(1+r_1) \text{ x } (1+r_2) \text{ x } \ldots(1+r_n)] - 1 $$

Holding Period Return

The total return received from holding an asset or portfolio of assets over a period of time

r = rate of return for given period

n = number of periods

$$ \sqrt[n]{(1+r_1)\times(1+r_2)\times\ldots(1+r_n)} - 1 $$

Geometric Mean

The central number in a geometric progression, also calculable as the nth root of a product of n numbers

n = number of periods

r = rate of return for given period