Formulas for AF4

Name	Purpose	Information Required	Formula
Future Value	To calculate what a given amount of money will grow to over a set period of time	Current Value (PV) Rate of return (r) Time period (t)	$FV = PV(1+r)^t$
Discounting	To calculate how much you need to invest now to achieve a target amount in a set period	Target value (FV) Rate of return Time period	$PV = \frac{FV}{(1+r)^n}$
Rate of return	To calculate the rate of return given the original and final investment		$R = (FV/PV)^{1/n} - 1$
Annual Equivalent Return	To calculate the annual rate of return when interest is paid more regularly than annually	Annual interest Payment frequency	Divide annual rate by frequency Assume starting point of £1,000 Compound up treating each period as a year. Take end result, deduct £1,000 and divide by 10 to get final figure
Gilt Running Yield	To calculate annual return when a gilt is purchased mid term	Coupon Clean price	$\frac{\text{Coupon}}{\text{Clean price}} \times 100$
Gilt yield to redemption	To calculate yield if gilt is held to redemption taking into account any gain or loss	Running Yield Clean price Years to redemption	Running Yield $\pm \frac{\text{Gain/loss} \div \text{Years to redemption}}{\text{Clean Price}} \times 100$ 1. Calculate Running Yield as above 2. Calculate loss or gain if gilt held until maturity 3. Divide this by number of years to redemption 4. Divide this by clean price and multiply by 100 5. Deduct this from running yield.

Market Capitalisation	To calculate total value of a company's shares	Share price Number of shares	Share price x number of shares
Earnings per share	To calculate how much profit is attributable to each share	Earnings attributable to shareholders Number of shares	Total earnings (less any payments to bondholders)/number of shares
Price Earnings ratio	To calculate the multiple of earnings the shares are trading at. In general terms a high P/E indicates a greater confidence than a share with a low P/E	Earnings per share Share Price	share price/earnings per share
Dividend yield	To calculate income yield on current share price	Share price Dividend amount	Dividend/Share price x 100
Dividend cover	To identify how likely it is that the company can maintain its dividend The higher the number the more likely the company will be able to continue paying its dividend	Earnings per share Dividend	Earnings per share/dividend
Gross Rental Yield	To calculate the yield on a rental property as a percentage of the property value	Purchase price of property Acquisition costs Gross rent Annual costs	<u>Gross Rental less annual costs*</u> Purchase price + acquisition costs • *Mortgage Interest costs should **not** be included

Discount or premium on Investment Trust shares	To calculate amount of premium or discount on IT shares	Net Asset Value per share Share Price	If share price is higher than NAV then shares are trading at a premium If share price is lower than NAV the shares are trading at a discount Premium NAV less Share Price NAV Discount Share Price less NAV NAV
Return on equity	To compare the return on a business compared to another investment	Profit after interest and tax Shareholder's funds	Profit AFTER Interest and Tax X 100 Shareholder's funds
Return on capital employed	To establish how well a company is using its capital	Profit before income & tax Company's debt & equity	Profit BEFORE Interest and Tax x 100 Debt + Equity
Debt equity ratio/aka Gearing ratio	Where company gets its capital	Debt Equity	Debt : Equity
Interest rate cover	How easy it is for the company to pay the interest on its debt	Profit before interest and tax Interest payments	Profit before interest and tax Gross interest
Capital Asset Pricing Model	To measure expected return on an investment	Risk free return Market return Beta of security	Expected return = risk free return + Beta(market return less risk free return)
Sharpe ratio	To compare the risk adjusted returns of two managers The higher the ratio the better	Actual return Risk free return Standard deviation of portfolio	Actual return less risk free return Standard deviation of portfolio

Information ratio	To identify the consistency of a manager in achieving risk adjusted returns	Actual return Benchmark return SD of actual return compared to benchmark return	Actual return less Benchmark return Tracking error of portfolio (Standard deviation of difference between portfolio and benchmark
Alpha	To identify value added by manager	CAPM expected return Actual return	Actual return less CAPM or return on benchmark
Holding Period Return	To show annual return	Opening Value, Closing value, dividends	Closing value less Opening Value + dividend X 100 Opening value
Money Weighted Return	Annual Return without the distortions of money in or out	As above plus amount of money added or withdrawn and the date of this	(v1-v0) –C v0 + (C x n/12) V1 = Closing value V2 = opening value C is **added money** N I number of months new money invested If money is taken out (v1-v0) + C v0 - (C x n/12) Here n = number of months the withdrawn money was not available
Time weighted Return	To compare two manager's performance taking away distortion of money in and out	As above plus amount of money added or withdrawn and the date of this	Calculate HPR for each period Express as a decimal rather than a percentage Add 1 to each Multiply these two figures together Deduct 1 from the answer and multiply by 100