**Unit 14: Time Value of Money**

**https://quizlet.com/gb/912387224/unit-14-time-value-of-money-flash-cards/?i=24ef59&x=1qqt**

Compounding: What does this tell us?

Future value of a current investment.

Interest on interest.

Discounting: What does this tell us?

Current amount needed today to get a fixed amount in the future.

Reverse- engineering.

Compounding Function on Calculator

xy

Compounding Formula

Present Value x ( Decimalised Return ) **xy** Years

Compounding: How to Decimalise interest rate

Divide interest rate by 100 and add 1.

4.5% = 0.045 = 1 = 1.045

Compounding Formula Example

£10,000 invested at 5% for 4 years.

£10,000 x 1.05 **xy** 4 = £12,155

Discounting Formula

Future Value **÷** (Decimalised Return ) **xy** Years

Discounting Formula Example

£10,000 invested at 5% for 4 years.

£10,000 / 1.05 xy 4 years = £8227.

Annual Effective Rate: What does this tell us?

True interest rate factoring in compounding over course of a year.

Annual Effective Rate Formula

* Decimalised Return xy Frequency
* -1
* x100

Annual Effective Rate: Decimal Interest per period

Interest rate / times per year.

6% interest quarterly = 1.5%.

Convert to decimal = 0.015 + 1 = **1.015**

‘Real’ Return Formula

Nominal Return – Inflation.

Calculating Post Tax Real Return

Nominal return x Marginal Tax Rate – Inflation

Calculating Real Return with Compounded Inflation.

Compound inflation rate.

Convert to normal interest rate & deduct.

Calculating Real Return with Compounded Inflation Example

Bond has 28% growth over 4 years. Inflation is compounded at 1.8% per annum.

1.018 xy 4 = 1.074

ANS -1 x 100 = 7.4%

28%- 7.4% = 20.6%.