

HKSI LE PAPER 8 – Securities

FORMULAE

Simple interest earned	loan principal x interest rate per period x number of periods
Compound interest: amount received at maturity	loan principal x $(1 + \frac{\text{interest rate per period}}{\text{int payments per period}})^{\text{periods x payments per period}}$
Option value	intrinsic value + time value
Price of a discounted security	$P = \frac{FV}{1 + [r \times \frac{n}{365}]}$ <p>P price (present value) FV face value of instrument r annual interest rate n number of days to maturity</p>
% change in bond price (Duration)	- Duration x change in yield
Option delta (Sensitivity to underlying price)	$\frac{\text{Dollar change in option price}}{\text{Dollar change in underlying stock price}}$
Option gamma (Sensitivity to change in option delta)	$\frac{\text{Change in delta}}{\text{Dollar change in underlying stock price}}$
Option vega (Sensitivity to change in volatility)	$\frac{\text{Dollar change in option price}}{1\% \text{ change in volatility of underlying stock price}}$
Option theta (Sensitivity to passage of time)	$\frac{\text{Dollar change in option price}}{\text{Decrease in time to expiration}}$

Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$
Quick ratio	$\frac{\text{Current assets} - \text{inventories}}{\text{Current liabilities}}$
Inventory turnover	$\frac{\text{Cost of goods sold}}{\text{Average inventories}}$
Debtors' turnover	$\frac{\text{Sales}}{\text{Average receivables}}$
Asset turnover	$\frac{\text{Sales}}{\text{Total assets}}$
Return on assets	$\frac{\text{Profit after tax}}{\text{Total assets}}$
Gross profit margin	$\frac{\text{Sales} - \text{cost of goods sold}}{\text{Sales}}$
Net profit margin	$\frac{\text{Profit after Tax}}{\text{Sales}}$
Return on equity	$\frac{\text{Profit after tax}}{\text{Average equity}}$
Earnings per share	$\frac{\text{Profit after tax}}{\text{Weighted average number of shares}}$
PE ratio	$\frac{\text{Market price per share}}{\text{Earnings per share}}$
Dividend yield	$\frac{\text{Dividend per share}}{\text{Share price}}$
Debt ratio	$\frac{\text{Total debt}}{\text{Total assets}}$

Debt to equity ratio

$$\frac{\text{Total debt}}{\text{Total equity}}$$

Interest coverage

$$\frac{\text{Profit before tax + interest expenses}}{\text{Interest expenses}}$$

Dividend discount model
(perpetuity)

$$\frac{\text{Annual dividend}}{\text{Required rate of return}}$$

Dividend growth model

$$\frac{\text{Next dividend}}{\text{Rate of return} - \text{growth rate}}$$

CAPM

$$R = R_f + \beta(R_m - R_f)$$

R = expected rate of return

R_f = risk-free rate

R_m = expected rate of return on a market portfolio

β = stock's beta value