Important Formulas of Investment PDF

Formulas
Examples
with Units

List of 17
Important Formulas of Investment

1) Actuarial Method Unearned Interest Loan Formula

Evaluate Formula

Formula

$$u = \frac{n_{Monthly} \cdot p \cdot APR}{100 + APR}$$

Example

$$99354.8387 = \frac{10 \cdot 28000 \cdot 55}{100 + 55}$$

2) Annuity Payment Formula

Evaluate Formula

Formula

$$PMT = \frac{r \cdot PV}{1 - (1 + r)^{-n}}$$

Example

$$9 = \frac{0.50 \cdot 10}{1 - (1 + 0.50)^{-2}}$$

3) Capital Gains Yield Formula

Evaluate Formula

Formula

$$CGY = \frac{P_c - P0}{P0}$$

Example

$$0.0309 = \frac{50 - 48.5}{48.5}$$

4) Certificate of Deposit Formula

Evaluate Formula

Formula

$$CD = P0_{Deposit} \cdot \left(1 + \left(\frac{r_{Annual}}{n_c}\right)\right)^{n_c \cdot n_t}$$

Example

$$5389.1179 = 5000 \cdot \left(1 + \left(\frac{0.015}{10}\right)\right)^{10 \cdot 5}$$

5) Compound Interest Formula

Evaluate Formula

Formula

$$FV = A \cdot \left(1 + \left(\frac{i}{n}\right)\right)^{n \cdot T}$$

Example

$$1.6E{+}9 = 100000 \cdot \left(1 + \left(\frac{8}{2}\right)\right)^{2 \cdot 3}$$

6) Information Ratio Formula

Evaluate Formula

Formula

$$R_{Info} = \frac{R_p - BR}{TE}$$

Example

$$0.25 = \frac{5 - 3}{8}$$

7) Jensen's Alpha Formula

Evaluate Formula

Formula

$$\alpha = Rp - (Rf + \beta p \cdot (Rm - Rf))$$

Example

$$11.585 = 12 - (0.5 + 0.85 \cdot (0.40 - 0.5))$$

8) Portfolio Standard Deviation Formula

Evaluate Formula

Formula

$$\sigma p = \sqrt{(w_1)^2 \cdot {\sigma_1}^2 + (w_2)^2 \cdot {\sigma_2}^2 + 2 \cdot (w_1 \cdot w_2 \cdot \sigma_1 \cdot \sigma_2 \cdot p_{12})}$$

Example

$$0.3815 = \sqrt{(0.4)^2 \cdot {0.37}^2 + (0.6)^2 \cdot {0.56}^2 + 2 \cdot (0.4 \cdot 0.6 \cdot 0.37 \cdot 0.56 \cdot 0.108)}$$

9) Portfolio Variance Formula

Evaluate Formula

Formula

$$Var_p = (w_1)^2 \cdot {\sigma_1}^2 + (w_2)^2 \cdot {\sigma_2}^2 + 2 \cdot (w_1 \cdot w_2 \cdot \sigma_1 \cdot \sigma_2 \cdot p_{12})$$

Example

$$0.1455 = (0.4)^2 \cdot {0.37}^2 + (0.6)^2 \cdot {0.56}^2 + 2 \cdot (0.4 \cdot 0.6 \cdot 0.37 \cdot 0.56 \cdot 0.108)$$

10) Profitability Index Formula

Evaluate Formula

Formula

$$PI = \frac{NPV + Initial\ Invt}{Initial\ Invt}$$

Example

$$1.35 = \frac{700 + 2000}{2000}$$

11) Rate of Return Formula

Evaluate Formula

Formula

$$RoR = \left(\frac{CV - OV}{OV} \right) \cdot 100$$

Example

$$30.4348 = \left(\frac{3000 - 2300}{2300} \right) \cdot 100$$

12) Real Rate of Return Formula

Evaluate Formula

Formula

$$Real\ RR = \left(\frac{1 + NR}{1 + IR} \right) - 1$$

Example

$$0.8182 = \left(\frac{1 + 19}{1 + 10} \right) - 1$$

13) Risk Premium Formula

Evaluate Formula

Formula

$$RP = ROI - Rf_{return}$$

Example

$$49988 = 50000 - 12$$

14) Sharpe Ratio Formula

Evaluate Formula

Formula

$$SR = \frac{R_p - R_f}{\sigma p}$$

Example

$$0.3571 = \frac{8 - 3}{14}$$

15) Straight Line Depreciation Formula

Evaluate Formula

Formula

$$SLD = \frac{C - S_s}{t}$$

Example

$$404.5 = \frac{4500 - 455}{10}$$

16) Total Stock Return Formula

Evaluate Formula

Formula

$$TSR = \frac{(P1 - P0) + D}{P0}$$

Example

$$3.6392 = \frac{(200 - 48.5) + 25}{48.5}$$

17) Treynor Ratio Formula

Evaluate Formula

Formula

$$T_r = \frac{R_p - R_f}{\beta p}$$

Example

$$5.8824 = \frac{8 - 3}{0.85}$$

Variables used in list of Important Formulas of Investment above

- **A** Principal Investment Amount
- **APR** Annual Percentage Rate
- **BR** Benchmark Return
- **C** Asset's Cost
- **CD** Certificate of Deposit
- **CGY** Capital Gains Yield
- **CV** Current Value
- **D** Dividend
- **FV** Future Value of Investment
- **i** Annual Interest Rate
- **Initial Invt** Initial Investment
- **IR** Inflation Rate
- **n** Number of Periods
- n_c Compounding Periods
- $n_{Monthly}$ Number of Remaining Monthly Payments
- n_t Number of Years
- **NPV** Net Present Value (NPV)
- **NR** Nominal Rate
- **OV** Original Value
- **p** Monthly Payment
- p_{12} Portfolio Correlation Coefficient
- P_c Current Stock Price
- **P0** Initial Stock Price
- $P0_{Deposit}$ Initial Deposit Amount
- **P1** Ending Stock Price
- **PI** Profitability Index (PI)
- **PMT** Annuity Payment
- **PV** Present Value
- **r** Rate per Period
- R_p Portfolio Return
- r_{Annual} Annual Nominal Interest Rate
- R_f Risk Free Rate
- R_{Info} Information Ratio

Constants, Functions, Measurements used in list of Important Formulas of Investment above

- Functions: **sqrt**, sqrt(Number)
  A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.

- R_p Expected Portfolio Return
- **Real RR** Real Rate of Return
- **Rf** Risk Free Interest Rate
- Rf_{return} Risk Free Return
- **Rm** Annual return of the market benchmark
- **ROI** Return on Investment (ROI)
- **RoR** Rate of Return
- **Rp** Annual Return on Investment
- **RP** Risk Premium
- S_s Salvage
- **SLD** Straight Line Depreciation
- **SR** Sharpe Ratio
- **t** Life
- **T** Number of Years Money is Invested
- T_r Treynor's Ratio
- **TE** Tracking Error
- **TSR** Total Stock Return
- **u** Actuarial Method Unearned Interest Loan
- Var_p Portfolio Variance
- w_1 Asset Weight 1
- w_2 Asset Weight 2
- **α** Jensen's Alpha
- **βp** Beta of the Portfolio
- σ_1 Variance of Returns on Assets 1
- σ_2 Variance of Returns on Assets 2
- **σp** Portfolio Standard Deviation

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