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Important Formulas of Investment

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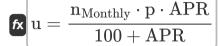# List of 17 Important Formulas of Investment

Important Formulas of Investment ⤴

1) Actuarial Method Unearned Interest Loan ⤴

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

$$ex \quad 99354.84 = \frac{10 \cdot 28000 \cdot 55}{100 + 55}$$

2) Annuity Payment ⤴

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

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

3) Capital Gains Yield ⤴

$$fx \quad \text{CGY} = \frac{P_c - P0}{P0}$$

$$ex \quad 0.030928 = \frac{50 - 48.5}{48.5}$$

4) Certificate of Deposit ⤴

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

Open Calculator ⤴

ex $$5389.118 = 5000 \cdot \left(1 + \left(\frac{0.015}{10}\right)\right)^{10 \cdot 5}$$

5) Compound Interest ⤴

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

Open Calculator ⤴

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

6) Information Ratio ⤴

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

Open Calculator ⤴

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

7) Jensen's Alpha ⤴

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

Open Calculator ⤴

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

8) Portfolio Standard Deviation

fx

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

Open Calculator

ex

$$0.381499 = \sqrt{(0.4)^2 \cdot (0.37)^2 + (0.6)^2 \cdot (0.56)^2 + 2 \cdot (0.4 \cdot 0.6 \cdot 0.37 \cdot 0.56 \cdot 0.108)}$$

9) Portfolio Variance

fx

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

Open Calculator

ex

$$0.145541 = (0.4)^2 \cdot (0.37)^2 + (0.6)^2 \cdot (0.56)^2 + 2 \cdot (0.4 \cdot 0.6 \cdot 0.37 \cdot 0.56 \cdot 0.108)$$

10) Profitability Index

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

Open Calculator

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

11) Rate of Return

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

Open Calculator

ex $$30.43478 = \left(\frac{3000 - 2300}{2300} \right) \cdot 100$$

12) Real Rate of Return ⤢

Open Calculator ⤢

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

$$ex \quad 0.818182 = \left(\frac{1 + 19}{1 + 10} \right) - 1$$

13) Risk Premium ⤢

Open Calculator ⤢

$$fx \quad \text{RP} = \text{ROI} - \text{Rf}_{\text{return}}$$

$$ex \quad 49988 = 50000 - 12$$

14) Sharpe Ratio ⤢

Open Calculator ⤢

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

$$ex \quad 0.357143 = \frac{8 - 3}{14}$$

15) Straight Line Depreciation ⤢

Open Calculator ⤢

$$fx \quad \text{SLD} = \frac{C - S_s}{t}$$

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

16) Total Stock Return ⤢

Open Calculator ⤢

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

$$ex \quad 3.639175 = \frac{(200 - 48.5) + 25}{48.5}$$

17) Treynor Ratio

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

$$5.882353 = \frac{8 - 3}{0.85}$$

Open Calculator

Variables Used

- **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
- **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

Constants, Functions, Measurements used

- Function: **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.

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