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Important Formulas of Compound Interest

Calculators!

Examples!

Conversions!

List of 15 Important Formulas of Compound Interest

Important Formulas of Compound Interest

Compound Interest

1) Compound Interest Formula

Open Calculator

fx $$\mathrm{CI} = \mathrm{P} \cdot \left(\left(1 + \frac{\mathrm{r}}{\mathrm{n} \cdot 100} \right)^{\mathrm{n} \cdot \mathrm{t}} - 1 \right)$$

ex $$160.7545 = 1000 \cdot \left(\left(1 + \frac{5}{4 \cdot 100} \right)^{4 \cdot 3\mathrm{Year}} - 1 \right)$$

2) Final Amount of Compound Interest

Open Calculator

fx $$\mathrm{A} = \mathrm{P} \cdot \left(1 + \frac{\mathrm{r}}{\mathrm{n} \cdot 100} \right)^{\mathrm{n} \cdot \mathrm{t}}$$

ex $$1160.755 = 1000 \cdot \left(1 + \frac{5}{4 \cdot 100} \right)^{4 \cdot 3\mathrm{Year}}$$

3) Principal Amount of Compound Interest

Open Calculator

$$P = \frac{CI}{\left(1+\frac{r}{n \cdot 100}\right)^{n \cdot t} - 1}$$

$$1001.527 = \frac{161}{\left(1+\frac{5}{4 \cdot 100}\right)^{4 \cdot 3\text{Year}} - 1}$$

4) Rate of Compound Interest

Open Calculator

$$r = n \cdot 100 \cdot \left(\left(\frac{CI}{P}+1\right)^{\frac{1}{n \cdot t}} - 1\right)$$

$$5.007137 = 4 \cdot 100 \cdot \left(\left(\frac{161}{1000}+1\right)^{\frac{1}{4 \cdot 3\text{Year}}} - 1\right)$$

5) Time Period of Compound Interest

Open Calculator

$$t = \frac{1}{n} \cdot \log\left(\left(1+\frac{r}{n \cdot 100}\right), \frac{CI}{P}+1\right)$$

$$3.004256\text{Year} = \frac{1}{4} \cdot \log\left(\left(1+\frac{5}{4 \cdot 100}\right), \frac{161}{1000}+1\right)$$

Annual Compound Interest

6) Annual Compound Interest

fx Open Calculator

$$CI_{Annual} = P_{Annual} \cdot \left(\left(1 + \frac{r_{Annual}}{100} \right)^{t_{Annual}} - 1 \right)$$

ex $$44 = 100 \cdot \left(\left(1 + \frac{20}{100} \right)^{2\text{Year}} - 1 \right)$$

7) Annual Rate of Compound Interest

fx Open Calculator

$$r_{Annual} = 100 \cdot \left(\left(\frac{CI_{Annual}}{P_{Annual}} + 1 \right)^{\frac{1}{t_{Annual}}} - 1 \right)$$

ex $$20 = 100 \cdot \left(\left(\frac{44}{100} + 1 \right)^{\frac{1}{2\text{Year}}} - 1 \right)$$

8) Final Amount of Annual Compound Interest

fx Open Calculator

$$A_{Annual} = P_{Annual} \cdot \left(1 + \frac{r_{Annual}}{100} \right)^{t_{Annual}}$$

ex $$144 = 100 \cdot \left(1 + \frac{20}{100} \right)^{2\text{Year}}$$

9) Principal Amount of Annual Compound Interest

Open Calculator

fx
$$P_{Annual} = \frac{CI_{Annual}}{\left(1+\frac{r_{Annual}}{100}\right)^{t_{Annual}} - 1}$$

ex
$$100 = \frac{44}{\left(1+\frac{20}{100}\right)^{2\text{Year}} - 1}$$

10) Time Period of Annual Compound Interest

Open Calculator

fx
$$t_{Annual} = \log\left(\left(1+\frac{r_{Annual}}{100}\right), \frac{CI_{Annual}}{P_{Annual}} + 1\right)$$

ex
$$2\text{Year} = \log\left(\left(1+\frac{20}{100}\right), \frac{44}{100} + 1\right)$$

Semi Annual Compound Interest

11) Final Amount of Semi Annual Compound Interest

fx

Open Calculator

$$A_{\text{Semi Annual}} = P_{\text{Semi Annual}} \cdot \left(1+\frac{r_{Annual}}{2 \cdot 100}\right)^{2 \cdot t_{\text{Semi Annual}}}$$

ex
$$13310 = 10000 \cdot \left(1+\frac{20}{2 \cdot 100}\right)^{2 \cdot 1.5\text{Year}}$$

12) Principal Amount of Semi Annual Compound Interest

Open Calculator

fx
$$P_{\text{Semi Annual}} = \frac{CI_{\text{Semi Annual}}}{\left(1 + \frac{r_{\text{Annual}}}{2 \cdot 100}\right)^{2 \cdot t_{\text{Semi Annual}}} - 1}$$

ex
$$10000 = \frac{3310}{\left(1 + \frac{20}{2 \cdot 100}\right)^{2 \cdot 1.5\text{Year}} - 1}$$

13) Semi Annual Compound Interest

Open Calculator

fx
$$CI_{\text{Semi Annual}} = P_{\text{Semi Annual}} \cdot \left(\left(1 + \frac{r_{\text{Annual}}}{2 \cdot 100}\right)^{2 \cdot t_{\text{Semi Annual}}} - 1\right)$$

ex
$$3310 = 10000 \cdot \left(\left(1 + \frac{20}{2 \cdot 100}\right)^{2 \cdot 1.5\text{Year}} - 1\right)$$

14) Semi Annual Rate of Compound Interest given Annual Rate

Open Calculator

fx
$$r_{\text{Semi Annual}} = \frac{r_{\text{Annual}}}{2}$$

ex
$$10 = \frac{20}{2}$$

15) Time Period of Semi Annual Compound Interest

fx Open Calculator

$$t_{\text{Semi Annual}} = \frac{1}{2} \cdot \log\left(\left(1 + \frac{r_{\text{Annual}}}{2 \cdot 100}\right), \frac{CI_{\text{Semi Annual}}}{P_{\text{Semi Annual}}} + 1\right)$$

ex

$$1.5\text{Year} = \frac{1}{2} \cdot \log\left(\left(1 + \frac{20}{2 \cdot 100}\right), \frac{3310}{10000} + 1\right)$$

Variables Used

- **A** Final Amount of CI
- **A_{Annual}** Final Amount of Annual CI
- **$A_{Semi\ Annual}$** Final Amount of Semi Annual CI
- **CI** Compound Interest
- **CI_{Annual}** Annual Compound Interest
- **$CI_{Semi\ Annual}$** Semi Annual Compound Interest
- **n** No. of Times Interest Compounded Per Year
- **P** Principal Amount of Compound Interest
- **P_{Annual}** Principal Amount of Annual Compound Interest
- **$P_{Semi\ Annual}$** Principal Amount of Semi Annual CI
- **r** Rate of Compound Interest
- **r_{Annual}** Annual Rate of Compound Interest
- **$r_{Semi\ Annual}$** Semi Annual Rate of Compound Interest
- **t** Time Period of Compound Interest *(Year)*
- **t_{Annual}** Time Period of Annual Compound Interest *(Year)*
- **$t_{Semi\ Annual}$** Time Period of Semi Annual CI *(Year)*

Constants, Functions, Measurements used

- Function: **log**, log(Base, Number)
  Logarithm function
- Measurement: **Time** in Year (Year)
  Time Unit Conversion

Check other formula lists

- **Compound Interest Formulas**
- **Simple Interest Formulas**

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