

Some examples on the Time Value of Money

Assignment with results

Simple interest is used for up to one year. For a longer time horizon, compound interest is used. Unless otherwise stated, follow this rule. The concept used for the time base is E30/360 in accordance with the lecture 05.

Calculate the annual interest rate that corresponds to the appreciation of your funds in the bank account if you know that you deposited 5,000 on March 1, 2021 and you have available the amount of 5,120 on September 1, 2021.

[4.8 % p.a.]

The promissory note issued on January 1, 2022 in the amount of 1,000,000.00 will be payable including interest of 6.2 % p.a. on November 1, 2022. What amount will the owner of the security receive on 1.3. 2022 at a **discount** rate of 8.4 % p.a.? *Note: Anticipated interest; $PV = FV * (1 - d * t)$*

[992,773.3]

You know that the future value of the capital is 22,500,000.00. The current value of the capital two years before maturity is 19,800,000.00. Determine the annual interest rate.

[6.6 % p.a.]

You know that the annual effective interest rate (r_e) is 10 %. What nominal annual interest rate will it correspond to when the interest is calculated every month?

$$\text{Note: } (1 + r_e) = \left(1 + \frac{r}{m}\right)^m$$

[9.569 % p.a.]

Determine future value of capital in five years, if you know that the current value of the capital is 987,654.00, nominal interest rate corresponds to 3.4 % p.s. with quarterly interest accrual.

[1,383,642.47]

Determine the annual effective interest rate if you know that the nominal rate is 1.9 % p.q. with monthly interest.

[7.8704 % p.a.]

Please calculate the present value of capital that will be in 10 years equivalent to \$10. For the calculation, you assume an interest rate of 10 % p.a.. Determine results for both simple interest and compound interest.

[5 | 3.8554]

Determine the future value of money you deposit for 3 years 9 months and 13 days. The deposited amount is 25,000. The bank offers 3.7 % p.a. and interest is calculated on a quarterly basis.

Please calculation for:

- Simple interest
- Compound interest
- Combined interest

(Note: consider the length of the interest period!)

[28,502.15 | 28,740.81 | 28,740.96]