

4 Rentenrechnung und Schuldtilgung

Englische Aufgaben

- 4.1** The future value of an annuity due with eight year period and interest rate of 3% p.a. is 25000€.
- Calculate the annual payments of the series of payments.
 - Calculate the present value of the payments.
[future value ... Endwert; annuity due ... vorschüssige Rente; annual payments ... jährliche Raten; present value ... Barwert]
- 4.2** The present value of an ordinary annuity with eight year period and interest rate of 3% p.a. is 15000€.
- Calculate the monthly payments of the annuity.
 - Calculate the future value of the series of payments.
[ordinary annuity ... nachschüssige Rente]
- 4.3** A capital of 80 000€ is invested at an interest rate of 5% p.a. Calculate the **a.** annual, **b.** monthly payment in arrears of a perpetuity.
[payment in arrears ... nachschüssige Zahlung; perpetuity ... ewige Rente]
- 4.4** A loan of 250 000€ is paid off by equal monthly payments of 2000€ per month at a rate of 2% p.q.
- Compute, how many years it takes to amortise the loan, if the first payment is made at the end of the first period.
 - Calculate the number of full instalments as well as the amount of the final partial instalment, if it is paid at the same time as the last full instalment.
 - Another option is to pay off the loan by equal quarterly payments, paid at the end of each period. Determine the size of such a quarterly payment.
[loan ... Kredit; to pay off ... zurückzahlen; to amortise ... tilgen; full/partial instalment ... Voll-/Teilrate; quarterly payments ... vierteljährliche Zahlungen]
- 4.5** A loan of 50 000€ at a rate of 10.5% p.a. shall be paid off in 7 years by equal monthly payments. The first payment is made at the end of the first period.
- Compute the monthly payment.
 - After 5 years the payment stops for 6 months.
 - Calculate the residual debt after 5 years and 6 months and the necessary monthly payment, to amortise the loan after 7 years nevertheless.
 - Calculate the number of full instalments and the overall term of the loan, if the payments continue as before after the break.
- [residual debt ... Restschuld; term of a loan ... Laufzeit eines Kredits]
- 4.6** Mr. Parkers wants to sell his flat and gets two offers:
- offer A:** 100 000€ immediately, 120 000€ one year later, and at the end of the fourth year 45 000€.
- offer B:** 180 000€ immediately, and for five years monthly payments of 1200€, paid at the end of each period starting exactly one year after the first payment.
- Compare both offers and decide by comparing the present values, which offer Mr. Parker should take. Calculate with a rate of 2.5% p.a.
- 4.7** Mrs. Soffel wants to pay 2400€ quarterly over the following 5 years into a bank account at a rate of 1.5% p.a. The first payment is made immediately.
- Compute the future value of the payments at the end of the fifth year.
 - After 8 payments, the payments are suspended for a period of one year.
 - Calculate the amount of money Mrs. Soffel would have to pay additionally to the normal rate at the beginning of the fourth year in order to attain her savings target.
 - At the beginning of the fourth year, Mrs. Soffel decides to extend the savings period by one year, and to switch to monthly payments, paid at the end of each period. Compute the amount of such a monthly instalment if no additional payments are made, and Mrs. Soffel wants to dispose of 50 000€ at the end of the sixth year.
[to suspend ... unterbrechen, aussetzen; to attain ... erreichen; savings target ... Sparziel; to dispose of ... verfügen über]

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4.8 Leasing proposal for a PKW:

acquisition value	19 850€
calculated recovery value	10 400€
down payment	5000 €
term of contract	48 months

a. Calculate the monthly payments for an effective annual interest rate of 6.5%.

b. A potential buyer can only afford a down payment of 4000€. Compute the effective annual interest rate, if monthly payments of 209€ (gross; max. km/year: 25 000) are considered.

[acquisition value ... Anschaffungswert; recovery value ... Restwert; down payment ... Anzahlung; term of contract ...

Vertragslaufzeit; effective annual interest rate ... effektiver Jahreszinssatz; gross ... brutto; potential buyer ... Interessent]