**Assignment 3.1**

a. Grietje spends 28% of her pocket money on sweets. That is an amount of €8.40 every week. Calculate how much pocket money Grietje gets every week.

b. Since the beginning of the year Linda has not put any money into her savings account anymore. At the end of the year Linda receives €118.30 interest. The interest rate is 1.4%. Calculate how much money Linda had in her savings account at the beginning of the year.

c. In three months’ time the price of diesel has dropped from €1.44 to €1.22 per litre. Calculate the percentage by which the price of diesel has dropped in those three months.

d. This year Ardiana earns €3,663.60 per month. That is 6.5% more than last year. Calculate what Ardiana earned per month last year.

e. Last year the market share of car manufacturer Opel was 14%. The market share has decreased by 2 percentage points. Last year a total of 160,000 cars were sold and this year 150,000. Calculate the percentage by which the car sales of Opel decreased.

**Assignment 3.2**On 1 January Hilbert Leijen has €2,400 in a savings account. On 1 April he pays an amount of €800 into the same savings account and on 1 November he withdraws €500 from the savings account.
The interest rate paid by the bank is 1.8% per year. Calculate the amount of interest which Hilbert Leijen can anticipate on his savings balance that year.

**Assignment 3.3**When Jet Hoekman was born, her father deposited €2,000 into a savings account on which the bank pays 2.4% interest per year. Calculate the amount in the savings account when Jet turns 18.

**Assignment 3.4**

On 1 March 2013 Pieter Rienstra deposited part of the profit for 2012 into a savings account against 0.25% compound interest per month. On 1 January 2015 the bank changed the interest into 3.00% compound interest per year and this percentage remains unchanged as from 1 January 2015. At the end of each period the interest is credited to the savings account.

a. Has the interest rate on an annual basis increased, decreased, or stayed the same on 1 January 2015? Explain the answer with a calculation whereby you round off to three decimals.

On 1 January 2019 the balance in the savings account was €47,562.57. Between 1 March 2013 and 1 January 2019 there were no interim deposits and withdrawals.

b. Calculate the amount which Pieter Rienstra paid into the savings account on 1 March 2013.

**Assignment 3.5**

On 1 January Mohammed Malak borrowed €5,000 from the bank. The interest is 7.5% per year. Mohammed has agreed with the bank that he will pay back €1,000 at the end of every year. Except for the repayment Mohammed also pays the interest due every time.
Calculate the interest which Mohammed must pay at the end of the third year.

**Assignment 3.6**

Given is the following table for personal loans

|  |  |  |
| --- | --- | --- |
| **Loan amount** | **Monthly payments in euros** | **Effective interest rate on an annual basis** |
|  | 24 months | 36 months | 48 months | 60 months |
| 1,500 | 71.09 | 50.31 | 40.01 | - | 13.4% |
| 2,250 | 104.56 | 73.35 | 57.83 | 48.59 | 11.2% |
| 4,500 | 207.79 | 145.35 | 114.28 | 95.76 | 10.5% |
| 6,800 | 311.71 | 217.30 | 170.31 | 142.27 | 9.7% |
| 11,300 | 513.69 | 356.76 | 278.57 | 231.88 | 8.8% |
| 25,000 | 1,132.23 | 784.98 | 611.92 | 508.54 | 8.4% |

Lars van der Vlist can pay a maximum of €150 per month when he takes out a loan. He wants to borrow the highest possible amount.

a. What amount will Lars borrow from the bank according to the above table?

b. In how many months will he repay that loan?

c. Calculate the total amount which Lars pays in interest and repayment if he borrows the maximum amount.

d. Calculate the total amount of interest which he has to pay.

e. Express the amount of interest in a percentage of the borrowed amount.

f. Why does the calculated percentage not correspond with the interest rate stated in the last column of the table?

**Computations**

**Assignment 3.1**

a. 28% = €8.40 → 100% = (8.40/28) × 100 = €30.

b. savings × 1.4% = €118.30 → savings = 118.30/0.014 = €8,450.

c. (1.22 ─ 1.44)/1.44 × 100% = 15.3%.

d. 3,663.60/1.065 = €3,440.

e. 14% of 160,000 = 22,400.
12% of 150,000 = 18,000.
(18,000 – 22,400)/22,400 × 100% = -19.6%.

**Assignment 3.2**

2,400 × 0.018 × 3/12 = 10.80.
3,200 × 0.018 × 7/12 = 33.60.

2,700 × 0.018 × 2/12 = 8.10.
The amount of interest is €52.50.

**Assignment 3.3**

2,000 × 1.02418 = €3,064.99.

**Assignment 3.4**

a. Decreased. The interest on an annual basis was 1.002512 ─ 1 = 1.03042 - 1 = 0.03042 so 3.042%.

b. 47,562.57/1.034 = 42,258.73
42,258.73/1.002522 = 40,000.

**Assignment 3.5**

At the beginning of the 3rd year he has repaid 2 × €1,000 = €2,000. Then the part not yet repaid amounts to €5,000 ─ €2,000 = €3,000. On this amount he must pay 7.5% interest and that is €3,000 × 0.075 = €225.

**Assignment 3.6**

a. €6,800.

b. 60 months.

c. 60 × 142.27 = €8,536.20.

d. 8,536.20 ─ 6,800 = €1,736.20.

e. 1,736.20/6,800 × 100% = 25.53%.

f. The effective interest rate is calculated on an annual basis and at 25.53% it runs over a period of 5 years.