Practice Question

5.1   The table below shows a summary of a small short-term loan scenario. The interest rate on this loan remains the same during the whole life of the loan.

End of Month	Interest	Balance Before Payment	Payment	Closing Balance After Payment
				R 1 000,00
July	R 90,00	R 1 090,00	R 225,00	R 865,00
Aug	R 77,85	R 942,85	R 225,00	R 717,85
Sept	R 64,61	R 782,46	R 225,00	R 557,46
Oct	R 50,17	R 607,63	R 225,00	R 382,63
Nov	R 34,44	R 417,06	R 225,00	R 192,06
Dec	R 17,29	R 209,35	R 209,35	R 0,00

5.1.1   What was the original loan amount?

5.1.2   Show that interest on this loan is being calculated at 9% per month.

5.1.3   Show how the Closing Balance After Payment value for October has been calculated.

5.1.4   Explain why the Payment value in December is different from every other month.

5.1.5   Calculate the real cost of this loan.

5.2   Now consider what would happen if the interest rate changed from 9% to 10% in September and remained at 10% until the end of the loan period.

End of Month	Interest	Balance Before Payment	Payment	Closing Balance After Payment
				R 1 000
July	R 90,00	R 1 090,00	R 225,00	R 865,00
Aug	R 77,85	R 942,85	R 225,00	R 717,85
Sept	R 71,79	R 789,64	R 225,00	R 564,64

5.2.1   Show that interest in September is calculated at 10%.

5.2.2   Complete the table to include the months of October to January.

5.2.3   Calculate the real cost of this loan.

5.2.4   Explain the effect of a 1% increase in the interest rate on this loan.

Answers

5.1.1   R1 000,00

5.1.2   Interest rate $= \dfrac{R90,00}{R1\,000,00} \times 100\%$
        $= 9\%$

5.1.3   Closing Balance after Payment
        = balance before payment - payment
        = R607,63 - R225,00
        = R382,63

5.1.4   The outstanding balance in December is R209,35. So, to pay off the loan a payment of R209,35 and not R225,00 is necessary.

5.1.5   Real cost of the loan = (R225,00 × 5) + R209,35
                               = R1 125,00 + R209,35
                               = R1 334,35

5.2.1   Interest rate $= \dfrac{R71,79}{R717,85} \times 100\% = 10\%$

5.2.2

End of month	Interest	Balance before payment	Payment	Closing balance after payment
				R1 000
July	R90,00	R1 090,00	R225,00	R865,00
Aug	R77,85	R942,85	R225,00	R717,85
Sept	R71,79	R789,64	R225,00	R564,64
Oct	R56,46	R621,10	R225,00	R396,10
Nov	R39,61	R435,71	R225,00	R210,71
Dec	R21,07	R231,78	R225,00	R6,78
Jan	R0,68	R7,46	R7,46	R0,00

5.2.3   Real cost of the loan = (R225,00 × 6) + R7,46
                               = R1 350,00 + R7,46
                               = R1 357,46

5.2.4   A 1% increase in the interest rate will increase the total amount paid back for this small loan by R1 357,46 - R1 334,35 = R23,11 and will increase the amount of time taken to pay back the loan from 6 months to 7 months.