Question 12   **(11 marks)**

Thomas has borrowed $16 000 from a bank at a reducible interest rate of 18% per annum with interest accrued and repayments made monthly. Standard repayments are set at $500 per month.

The table below shows the progress of the loan for the first six months. All values have been rounded to the nearest cent.

Month	Amount owing at beginning of month	Interest for the month	Repayment	Amount owing at end of month
1	16 000.00	240.00	500.00	15 740.00
2	15 740.00	236.10	500.00	15 476.10
3	15 476.10	232.14	500.00	15 208.24
4	15 208.24	228.13	500.00	14 936.37
5	14 936.37	224.04	500.00	14 660.41
6	14 660.41	A	500.00	B

(a)   What is the monthly interest rate?   (1 mark)

(b)   Determine the values of A and B.   (2 marks)

(c)   Determine the length of time it will take Thomas to pay off the loan.   (1 mark)

(d)   Determine the total amount Thomas pays over the duration of the loan.   (3 marks)

(e)   The bank suggests that Thomas need only make repayments of $240 per month. Describe how this would affect the length of time and total amount he pays over the duration of the loan.   (2 marks)

(f)   After listening to advice, Thomas decides that he wants to pay off the loan completely in two years, making equal payments each month over that time. Determine the amount of each repayment he will need to make in order to make this happen (correct to the nearest cent).   (2 marks)