

## 841 Reducible Interest in Sequence

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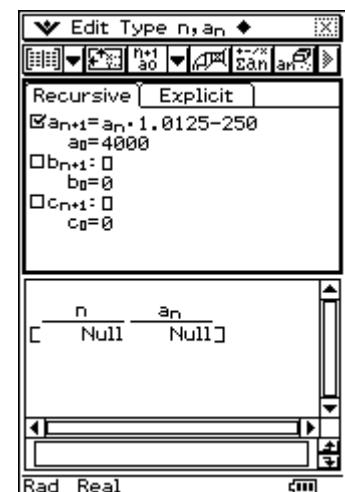
Open the Sequence application.

Tap **Edit**, **Clear All**, **OK**.

Suppose a student wishes to purchase a car priced at \$4000. The student has no savings but due to a part-time job can afford to repay \$250 every month. A bank offers the student a loan of \$4000 at a monthly interest rate of 1.25% compounded monthly. How many complete months will it take the student to repay the loan and how much interest will be paid in total?

We will use the recursive formula  $T_{n+1} = T_n \times 1.0125 - 250$ ,  $T_0 = 4000$  to solve this problem.

Enter the formula as shown.



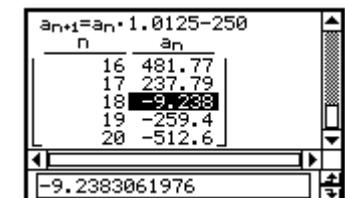
Without interest, the loan will take  $4000 \div 250 = 16$  months to repay, so we will need to allow for a few more, say 20, iterations of the formula.

Tap **TABLE**.



Use Start and End to set the first term as **0** and last term as **20** and then tap **OK**.

Tap **TABLE**.

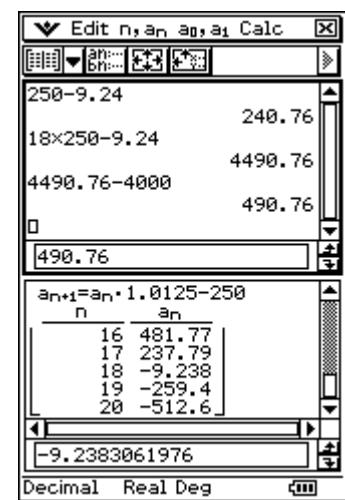


Scroll to the bottom of the table.

The loan is repaid after 18 repayments.

We will now need to carry out a few manual calculations.

Tap **RUN** to open the Sequence RUN window.



As the figure in the 18th row and 2nd column is -9.24, we can deduce that the final payment was \$9.24 too much - it should have been \$240.76.

The total repaid was 18 payments of \$250 less \$9.24, which comes to \$4490.76.

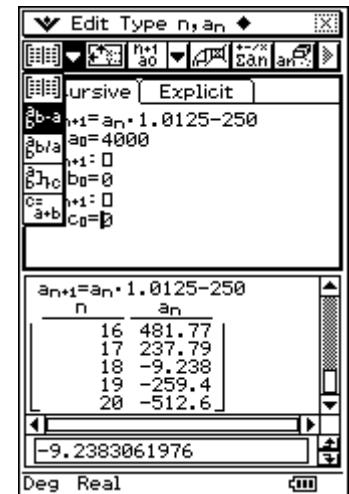
The total interest paid is \$490.76 - the total repaid less \$4000, the amount of the original loan.

It is also possible to determine the amount of interest paid in any particular month - say the 12th month.

Close the RUN window using .

Tap the drop-down arrow next to .

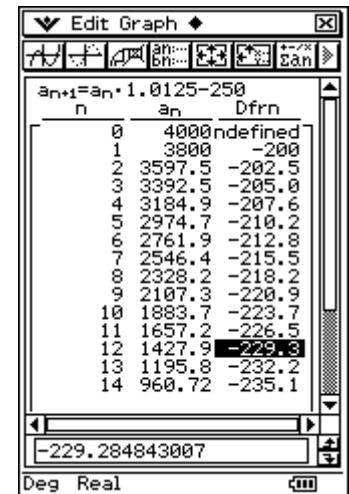
Tap .



Tap **Resize**.

A third column has been added to the table headed Dfrn (the difference of consecutive terms).

Note the difference of \$229.28 for the 12th month.



Without interest, the loan should reduce each month by the regular repayment of \$250.

The reduction of only \$229.28 is due to the interest added.

Tap  to again open the Sequence RUN window.

The interest for the 12th month was \$20.72.

