A reducible interest loan is typically used to buy expensive items.

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 with an interest rate of 15% pa compounded monthly. How many complete months will it take the student to repay the loan and how much interest will be paid in total?

Start a new spreadsheet.

Enter **4000** in cell A1 for the initial loan.

One month later, we must add interest (15% ÷ 12 = 1.25% per month) to the loan.

Tap into cell C1 and enter **0.0125** for the interest rate as a decimal.

Tap into cell B1 enter the formula **=A1×C1** to calculate the interest.

We must also decrease the loan by the $250 repayment.

Tap into cell C2 and enter **250** for the repayment.

Tap into cell A2 enter the formula **=A1+B1-C2**

The $ symbols in the cell references mean that the references will NOT be altered as we copy and paste our formulas to other cells in the spreadsheet (called an absolute reference).

Tap into cell B1 and then tap again and drag (when cell B1 shows a white border) the cell down to B2.

Tap into cell A2 and immediately drag right into cell B2 so that both cells are highlighted. *Use Edit, Undo to go back a step if you make a mistake.*

Tap back into cell A2 and immediately drag down into cell A3.

Tap back into cell A3 and immediately drag down into cell A4.

Note: In the fourth month the starting balance in cell A4 is $3392.5 and the interest added at the end of the month in cell B4 is $42.406.

Repeat the drag operation one line at a time until the balance in column A reduces to 0 or less.

Tap on the column A heading and drag across into the column B heading to select both columns.

Tap **Edit**, **Number Format**, **Fix2**, **OK**.

Increase the width of column A by dragging the AB border to the right.

	A	B	C
8	2546.39	31.83	
9	2328.22	29.10	
10	2107.33	26.34	
11	1883.67	23.55	
12	1657.21	20.72	
13	1427.93	17.85	
14	1195.78	14.95	
15	960.72	12.01	
16	722.73	9.03	
17	481.77	6.02	
18	237.79	2.97	
19	−9.24	−0.12	
20			
21			

A20

Because the balance showing in cell A19 is negative, the student has paid $9.24 too much on their final (18th) repayment.

So their final repayment only needs to be $250 - $9.24 = $ 240.76.

The total interest can be found by summing the monthly interest figures from B1 to B18.

Tap into cell B21 and start a formula with =.

Tap **Action**, **List-Calculation**, **sum**

Complete the formula with **B1:B18)** and tap ✔.

	A	B	C
9	2328.22	29.10	
10	2107.33	26.34	
11	1883.67	23.55	
12	1657.21	20.72	
13	1427.93	17.85	
14	1195.78	14.95	
15	960.72	12.01	
16	722.73	9.03	
17	481.77	6.02	
18	237.79	2.97	
19	−9.24	−0.12	
20			
21		490.76	
22			

=sum(B1:B18)
B21 490.7616938

This spreadsheet can easily be adapted for various

- Loan Amounts (cell A1)
- Interest Rates (cell C1)
- Repayment amounts (cell C2)

Shown at right is the scenario for a $3000 loan at 12%pa compounded monthly with repayments of $400.

The loan has been repaid in 8 months, final repayment $400 - $65.70 = $334.30 and total interest $134.30.

	A	B	C
1	3000.00	30.00	0.01
2	2630.00	26.30	400
3	2256.30	22.56	
4	1878.86	18.79	
5	1497.65	14.98	
6	1112.63	11.13	
7	723.75	7.24	
8	330.99	3.31	
9	−65.70	−0.66	134.3
10	−466.36	−4.66	
11	−871.02	−8.71	
12	−1279. ...	−12. ...	
13	−1692. ...	−16. ...	
14	−2109. ...	−21. ...	
15	−2530	−25	

=sum(B1:B8)
C9 134.3018918