

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 ( $15\% \div 12 = 1.25\%$  per month) to the loan.

	A	B	C
1	4000		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

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

Tap into cell B1 enter the formula **=A1×\$C\$1** 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-\$C\$2**

*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).*

	A	B	C
1	4000	=A1*\$C\$1	0.0125
2	3800	50	250
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

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.*

	A	B	C
1	4000	=A1*\$C\$1	0.0125
2	3800	47.5	250
3	3597.5	44.969	
4			

	A	B	C
1	4000	=A1*\$C\$1	0.0125
2	3800	47.5	250
3	3597.5	44.969	
4	3392.5	42.406	
5			

	A	B	C
1	4000	=A1*\$C\$1	0.0125
2	3800	47.5	250
3	3597.5	44.969	
4	3392.5	42.406	
5			
6			

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			
22			
23			


Because the balance showing in cell A19 is negative, the student has paid \$9.24 too much on their final (18<sup>th</sup>) 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			
23			

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	-1279.00	-12.00	
13	-1692.00	-16.00	
14	-2109.00	-21.00	
15	-2520.00	-25.00	