

Calculating the Amount to be Paid per Month

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If:

- p = amount initially owed
- r = interest rate, in decimals (accumulating monthly)
- m = number of months in which you want to pay off the money
- x = amount of money to be paid per month

then use the following equation to calculate x :

$$x = \frac{(p)(r)(1+r)^{(m-1)}}{(1+r)^m - 1}$$

I assumed here that you make your first payment before accumulating your first interest.

Example: You owe \$100 and are charged 10% in monthly rate. You want to pay it off in 4 months. Then:

- $p = 100$
- $r = 0.1$
- $m = 4$

If you plug in these numbers to the equation above, you get:

$$x = \frac{(100)(0.1)(1 + 0.1)^{(4-1)}}{(1 + 0.1)^4 - 1} = \frac{(10)(1.1)^{(3)}}{(1.1)^4 - 1} = \frac{(10)(1.331)}{(1.4641) - 1} = \frac{13.31}{0.4641} = 28.68$$

So, $x = 28.68$, meaning that if you pay \$28.68 per month, you should be able to pay off the debt.

The following example illustrates this is not B.S.

In the first month, you pay \$28.68, leaving you \$71.32. You accumulate a 10% interest rate on that, leaving you with \$78.45 by the time you make payment next month. Your second payment leaves you with \$49.77, which becomes \$54.75 after it accumulates another 10% interest. In the third month, you make another payment, leaving you with \$26.07, which becomes \$28.68 after accumulating interest. Your payment in the fourth month leaves you with no debt left!