1. On Excel we see

month	Payment	To Interest	To Principal	Loan Balance
119	$58.18	$0.76	$57.42	$57.17
120	$58.18	$ 0.38	$57.80	($0.63)

What is the total amount paid on the loan?

a) 58.18

b) 6981.60

c) 6980.97

d) other that can be derived from the given info

e) no way to tell without more info

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$$\frac{4795\frac{.08}{12}}{(1 - (1 + \frac{.08}{12})^{-120})} = 58.176581...$$

120	$58.18	$57.17\frac{.08}{12}$	$58.18-.38$	$57.17-57.80$
	same	balance×rate	payment−int	balance−principal

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2. If we pay an extra \$20 each month on a loan then we will pay

   a) less total interest and I have a good reason why
   b) less total interest but I am unsure of why
   c) more total interest but I am unsure of why
   d) more total interest and I have a good reason why
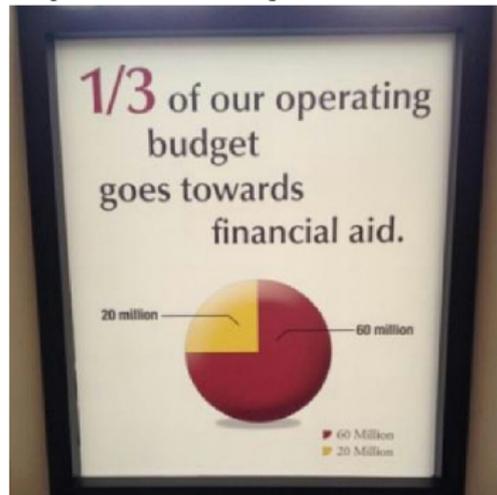   e) the same amount of interest
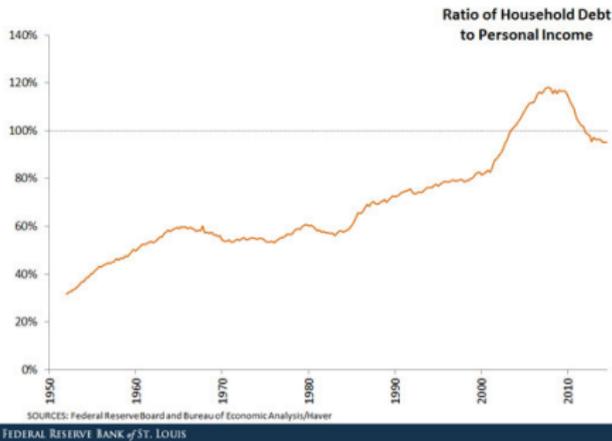
Chip Bok 10/07/2008

3. We can calculate the total interest in Excel via two of the three methods. Which is incorrect?

  a) payment $\times$ # payments $-$ any overpayment $-$ loan
  b) add the monthly interest for each and every month
  c) original loan $\times$ monthly rate $\times$ # payments

http://www.mathfunny.com/

1/3 of our operating budget goes towards financial aid.

20 million — 60 million

■ 60 Million
■ 20 Million

4. What algebraic operations did we use to derive the loan payment formula?

  a) algebra of fractions, multiply, distribute, reciprocal and negative power
  b) rule for powers—add the exponents
  c) both of the above
  d) none of the above

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bank earns interest on the lump sum amount while we pay it back via the periodic payment formula so that our payments plus resulting interest equals the lump sum amount plus interest.

5. Which option would you choose? They both take the 30 years to pay off.

  a) Option 1 Smaller Loan (lower balances at 2 and 5 years)
  b) Option 2 Lower Rate (lower monthly payment, lower debt-to-income ratio, $7,298.37 less total interest)

events described all actually happened, and the same language is purposely used. Real-life considerations can be ill-defined and require the critical and creative analysis of a variety of interpretations in order to fully consider the implications.

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Problem solving at the heart of mathematics:
visualization
generalization
making decisions

Some Loans Require Payments While in School

Your last payment of $50.00 was received on 07/16   If you would like to repay your loan in full, send the total Payoff Amount shown below to the address listed on Item 6 on the back of this form. **Payoff payments must be sent to this address.** This payoff amount is estimated 10 days from the statement date above.

If you have any questions, please contact our office at (877)872-4768 or at our web site www.usagroup.com.

BILLING INFORMATION

DISBURSEMENT DATE	LOAN PROGRAM	ORIGINAL LOAN AMOUNT	INTEREST RATE	PAYOFF AMOUNT	CURRENT AMOUNT DUE	AMOUNT PAST DUE	LATE CHARGES	OTHER FEES	AMOUNT DUE
08/06	STF3	$2,450.00	6.920%	$2,569.04	$50.00	$.00	$.00	$.00	$50.00
				$2,569.04	$50.00	$.00	$.00	$.00	$50.00

installment payment $= \dfrac{\text{loan } r}{1 - (1 + r)^{-n}}$

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$$\text{installment payment} = \frac{\text{loan } r}{1 - (1 + r)^{-n}}$$

$$50 = \frac{2450 \frac{.0692}{12}}{1 - (1 + \frac{.0692}{12})^{-n}}$$

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6. If we take out a $100 loan at 700% compounded monthly for 2 months, the monthly payment would be

a) $100(1 + \frac{7}{12})^2$

b) $\dfrac{100((1 + \frac{7}{12})^{(2*12)} - 1)}{(\frac{7}{12})}$

c) $\dfrac{100\frac{7}{12}}{(1 - (1 + \frac{7}{12})^{-2})}$

d) other

Answer the question and then work with a neighbor to write out a scenario for each of the choices.

7. If we take out a $100 loan at 700% compounded monthly for 2 months, what is the payment to interest for the first month in the amortization table?

a) $100\frac{7}{12}$

b) $\dfrac{100\frac{7}{12}}{(1-(1+\frac{7}{12})^{-2})} \times 2 - 100$

c) other

STOP THE **PAYDAY LOAN** DEBT TRAP

Payday lender in Boone

8. Within 2 weeks of my next paycheck I can (if I qualify) write a check for $117.50 and receive $100 (so the interest on $100 is $17.50). Then, when I'm paid, I bring $117.50 and buy back my check. If I don't show up, they deposit my check, and if it bounces I owe "returned check charges" They told one of our faculty members that their rate was better than a credit card.

First, compute the 2-week rate as the percentage of interest. Next, what is the annual rate (multiply the 2-week rate by 26, as there are 26 double weeks in a year) and how does it compare to credit card rates?

  a) 17.5%, which is about the same as some credit cards
  b) 26%, which is about the same as some credit cards
  c) 117.5%, which is much higher than credit cards!
  d) 455%, which is much higher than credit cards!
  e) none of the above