Dr. Sarah's MAT 1010: Introduction to Mathematics

Part A: Answer all the questions and type your responses for the forum. Add a new discussion topic with the subject as your preferred name and the post as your responses and any questions you have.

Part B: Respond separately to at least two of your classmates postings in a meaningful way. Use their preferred name (like Dr. Sarah is mine), with something new that justifies your position on (at least) one of the questions. Don't just say, "Yeah, I agree." Instead, say, "Yes preferred name, but we also need to consider..." Or, "Preferred name, I don't agree because..." You might also pose questions, answer questions, extend ideas, or compare and contrast your responses and summarize what you chose and why.

1. Which option would you choose? They both take the same amount of time—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)

2. You'll see a real-life rate of 700% come up in Payday loans in an upcoming video. 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) $\dfrac{100((1 + \frac{7}{12})^{(2\times12)} - 1)}{(\frac{7}{12})}$

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

    d) other

3. For each of the other choices in #2 a, b, c (that you did not select), write a scenario that represents it. So your response will be two or three different scenarios.

4. We can calculate the total interest in Excel via two of the three methods. Which is **<u>incorrect</u>**?

    a) method 1: payment × # payments − any overpayment − loan

    b) method 2: add the monthly interest for each and every month

    c) method 3: original loan × monthly rate × # payments

5. 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)

where the .63 is in red. What is the total amount paid on the loan?

    a) $116.00

    b) $6981.60

    c) $6980.97   More on other side

   d) other that can be derived from the given info

   e) no way to tell without more info

6. 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

7. Make an amortization schedule (in your notes) for the first three payments of a new car loan, where $14,500 is borrowed at a rate of 12% compounded monthly, and monthly payments are made for 4 years. Show your computational work and formula setups on paper for month 1, month 2, and month 3 of the amortization table. Then check your work—the loan balance at the end of 3 months is $13782.35 —and answer the following questions:

   a) What is the monthly payment?

   b) What is the interest, in dollars, paid for the first month?

   c) What is the loan balance after the first month?

   d) What is the interest paid for the first three months (add them up)?

   e) What is the total paid over the life of the loan (4 years)?

   f) What is the total interest over the life of the loan?

8. 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

9. Real-life Payday lender in Boone: Within 2 weeks of my next paycheck I can come in and (if I qualify), write a check to them for $117.50 and receive $100 cash at that time, so the interest on $100 is $17.50. Then, when I get paid, I bring $117.50 in cash to their office and buy back my check. If I don't show up, they deposit my check, and if it bounces I will owe "returned check charges," plus the amount, and then on to a collection agency with potential civil charges if I don't pay. 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) 24%, 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