

Math 105 Exam 1 Review

February 3, 2018

Formulas:

$$F = P + Prt, \quad I = F - P, \quad F = P(1 + r)^t, \quad F = P(1 + i)^m$$

Problem 1 - Myron takes out a loan in order to buy a guitar. His bank loans him 600 dollars over 9 months at a simple interest rate of 5 percent. How much will Myron pay back to his bank after the 9 month period? How much of this payment is interest?

Problem 2 - Ellen placed 1,700 dollars in a certificate of deposit that payed 8 percent simple interest. At the end of the 2 year period, how much will her CD have accumulated? How much money did she make?

Problem 3 - Currently, the University of Louisville has a semester tuition of 5,534 dollars (for instate students). If the rate of annual inflation is 2.1 percent (you can find this information of the website of the BLS), how much will the cost of attending UofL be for instate students in 2025?

Problem 4 - Per the last problem, the BLS states that the annual inflation rate is around 2.1 percent. How much it would take to buy a venti Starbucks Frappucino in the year 2030, if the current cost of one is 4.95?

Problem 5 - Tyler places 3,250 into a savings account, hoping to earn enough to buy a car. The account has a 3.5 percent interest rate, compounded monthly. He leaves his money in the account for 5 years. How much money does Tyler have now? Does he have enough to buy a 6,000 dollar car?

Problem 6 - Danielle, being an only child of two doctors, ears 40,000 dollars when she turns 18, as her parents had opened a savings account for her. They started this account when she was born, and the account payed 1.5 percent interest, compounded quarterly. How much money did Danielle's parents originally place into the account? How much interest did the account earn?

Problem 7 - Jordan (yes me), had to take out loans during his freshman year of college, which was 5 years ago. He took out 2,000 dollars and now owes 4,500. The loan provider calculates interest monthly. What is the interest rate on the loans?

Problem 8 - (Name) won the lottery when (Name) was 20 years old. Being smart, (Name) put the money into a savings account for 40 years. After

those 40 years, the 20,000 dollars that was originally deposited had turned into 250,000 dollars after being compounded semi-annually. What was the rate of interest this savings account used?

Problem 9 - Edgar wants to save up 860 dollars for a Roomba so he doesn't have to sweep anymore. Let's say that Edgar deposited about 50 dollars into an account that compounds interest weekly at a rate of 5.5 percent to save up for his Roomba dreams. How long does it take Edgar to buy his Roomba?

Problem 10 - Roxanne takes out a small loan of 35,000 in order to start up her publishing company. Her loan interest is calculated at 3.75 percent compounded monthly, and Roxanne wants to wait until the loan cost is around 60,000 dollars in order to start making payments on the loan. How long does Roxanne have until she begins making payments?

Some Hints - First, note that you should follow the method we used in class. State the given information in terms of variables and the variable that you are looking for. Then state the formula you are going to use. Solve for the variable you want to find. Substitute in the values of the variables you know, and then plug things into your calculator in order to solve them.

Next, don't forget to add units onto every answer, and if you are looking for a rate to convert the decimal back into a percentage.

Finally, note that the formula you will be using depends completely upon the way that interest is calculated: simple, annual, compounded otherwise. After you know what formula you will be using based on the above, you can deduce what other variables you need to pull from the question in order to solve it. Remember that most of the points gained on each question aren't even about having the correct final answer!