

Math 107

Review for Test #2

The test covers finance. Here are some review problems

1. Mr. Wildman is setting up a trust fund for his favorite Math 107 students. How much does he need to invest today if he wants to have \$100,000 in ten years and he can get 10% interest compounded annually? What if he can get 10% compounded quarterly?
2. You want to save money for retirement. You plan to retire in 35 years and you determine you can deposit \$250 monthly in an account that pays 10% interest compounded monthly. How much money will be in the account at retirement if payments are made at the end of each month
3. To save money for a boat, Valerie deposits \$5000 in an account paying 8% compounded monthly
 - a) How much will she have for her boat in 10 years?
 - b) What is the effective annual yield on this account?
4. The owner of Oak Hill Squirrel Farm deposits \$1000 at the end of each quarter in to an account paying 8% compounded quarterly. What is the value at the end of five years?
5. Clearlake Optical has a \$50000 note that comes due in 4 years. The owners wish to deposit an equal amount monthly into a fund that earns 8% compounded monthly, how much should each monthly payment be?
6. You have inherited \$2500 from your dear old cat. In honor of her life you decide to invest the money. How much will you have in 6 years if you can get 9% compounded monthly?
7. What is the effective annual yield on the account in problem 6?
8. You make a deposit of \$125 at the end of each month in an account paying 10% compounded monthly. How much will you have in the account at the end of 5 years.
9. You purchase a home with a purchase price of \$95,000 with \$15,000 down. You agree to repay the loan at 7.5% fixed interest for 30 years. What is your monthly payment? What is the total amount you pay in interest if you pay off this loan as scheduled?
10. What must you invest today to have \$5000 in five years if you can receive 12% compounded monthly?

11. How much more will you earn in interest if you deposit \$2000 in an account paying 6% compounded quarterly for 10 years than if you deposit the same amount in an account paying 6% simple interest for 10 years
12. What is the monthly payment on a home loan with a purchase price \$218,000. Suppose you make a 20% down payment and the interest rate is 8.5% fixed for a term of 30 years. Compare the total amount of interest you would save if instead you took out a 15 year loan with 20% down and 7.0% interest
13. You decide that a penny saved is a penny earned and so you decide to deposit a penny in an account that pays 6% compounded daily for 10 years. How much will you have in 10 years? How much would you have if you just deposited all the pennies in a jar
14. Sam and Frank are in an investment club and Sam Receives \$20000 to invest at 6% compounded monthly. Frank gets \$400 per month to invest in an account for 50 months that earns 7.5% compounded monthly.
- What is the amount in each account after 1 year, 2 years, 5 years?
 - What is the amount in each account after 50 months?
 - 10 years from now what is the amount in each account?
15. To finance your education you decide to take out a plus loan for \$6000 with interest 7.4% compounded monthly. While you are in school interest accumulates. How much will you owe on this loan when you finish your education at the end of 4 years? How much of that value is interest?
16. Suppose you want to accumulate \$50000 for a college fund over the next 15 years. Determine whether the following plans will allow you reach your goal?
- You deposit \$50 per month into an account with an APR of 8%
 - You deposit \$200 per month into an account with an APR of 5%
17. Suppose we borrow \$1500 at 4% APR and pay it off in 24 monthly payments. Make an amortization table showing payments over the first three months

Payment #	Payment	Applied to Interest	Applied to Balance	New Balance

18. You have a credit card with a balance of \$2500 and you have an APR of 18.5%. For one month you make a payment of \$250 and make purchases of \$125 and \$45. What is your finance charge and what is your new balance?

- 19.** You have a VISA card with an APR of 15% and you have an outstanding balance of \$5500. You stop making purchases with this card and decide to pay off this amount using the minimum payment which is 6% for this card. What will your balance be after 2 years?
- 20.** You have \$1000 on your Visa card. Assume that you make no more charges on the card and that the card charges 9.9% APR and requires a minimum payment of 3% of the balance. Assume you only make minimum payments
- How much balance will your card have after 18 months?
 - How long will it take for the balance to be below \$100
- 21.** You want to have a monthly income of \$4500 from a fixed term annuity when you retire. Take the term of the annuity to be 20 years, and assume an APR of 6% over the period of investment. How large will your nest egg have to be at retirement to guarantee this income?
- 22.** You plan to make regular deposits for 40 years to build up your savings to the level you determined in Exercise 21. How large must your monthly deposit be?