MA 15200 Supplemental Worksheet, Lesson 40

For the following formulas: S is future value, P is present value, r is the interest rate, k is the number of compounding periods in a year (or number of payments per year), t is time in years, A is the amount of money, and R is the amount of payment; with the formula for the periodic interest rate $i = \frac{r}{k}$.

Any of the previous formulas may also be used on this worksheet (the formulas for annuities or investments).

12. Amortization Formula (Installment Payments): $R = A\left[\frac{i}{1-(1+i)^{-kt}}\right]$

(The amount of an installment payment when the amount borrowed is A.)

1) The Jackson's are buying a $22,400 car and financing the full amount over 5 years. If they can secure a loan at 6.3% annual interest on unpaid balance, what will be the amount of the monthly payment? Round to the nearest cent.

2) Jean has offers from two different lending institutions to finance her mortgage of $120,000. One institution (A) will offer her a 20 year mortgage at 6% annual interest rate. The other (B) will offer her a 25 year mortgage at 6.6% annual interest rate. What will be the monthly payment for each? Round to the nearest dollar.

3) Using your answers from problem 2, approximately how much total would Jean pay for her house if she made all of her payments to institution A? To institution B? How much approximate interest would be paid to each institution?

4) Judy borrows $850 from her bank to pay for a computer, printer, and other accessories. If she pays 5% annual interest and the loan is for 1 year, how much is each monthly payment? Round to the nearest cent.

5) Maryanne plans on depositing $150 every 6 months into an account that pays 4% annual interest compounded semiannually. How much would be in the account in 10 years? Round to the nearest cent. How much actual money did Maryanne deposit and how much interest was earned?

6) Jesse has been approved for a $4000 personal loan from his bank. What would his **quarterly** payments be, if he is charged 6 ¼ % annual interest and the loan is to be paid off in two years? Round to the nearest cent.

7) Lucy put $2500 in a savings account that earns 5% annual interest compounded daily. How much is in this account in 8 years? Assume no additional deposits or withdrawals. Round to the nearest cent.

8) Jeff just won the lottery! He will be paid $2500 a month for 15 years. If the account paying him earns 6% compounded monthly, what is the present value of these winnings to the nearest dollar?

9) The Cooper's car needs $1200 in repairs, which the family does not have. A bank will loan them the full amount so they can fix the car, but they must repay the loan at 8 ½ % annual interest and they must make **semiannual** payments for 3 years. How much is each payment to the nearest cent?

10) Julie has been begging her parents for an iPod. Since she just turned 18, her parents suggested she go to the local bank and ask for a loan. The bank will loan Julie $180 for her iPod and she must repay the loan in 18 months with 5.4% annual interest. How much are her monthly payments? Round to the nearest cent. How much over the $180 cost of the iPod does Julie pay?