Supplemental Instruction Handouts
Business Math
Final Review
Chapters 9, 10, 11, 12, 13, 14 & 16

1. At what nominal rate of interest will money triple in fifteen years if compounded monthly?

2. In how many years and months (to the nearest month) will money double itself at 14% compounded semiannually?

3. What nominal rate compounded monthly is equivalent to 8% compounded quarterly?

4. An invoice indicates that interest at the rate of 1.5% per month will be charged on overdue amounts. What effective rate of interest is being charged?

5. Find the nominal rate of interest compounded semiannually which is equivalent to an effective rate of 17%.

6. What is the effective rate of interest if $2,000 grows to $3,500 in five years compounded quarterly?

7. What is the economic value today of receiving $1,200 at the end of each month for the next seven years if money can earn 7% compounded monthly during that time period?

8. What is the economic value today of receiving 36 monthly payments of $1,000 with the first payment received nine months from today? Assume money can earn 11.5% compounded monthly.

9. A television was purchased on credit with 24 monthly payments of $50. The first payment was made one month after the date of purchase and the interest rate charged was 18% compounded monthly. What was the purchase price of the television?

10. Fred purchased a car with a $2,500 down payment and end of month payments of $450 for four and a half years. The interest rate charged was 6.5% compounded monthly. What was the purchase price of the car?

11. Barney owes $20,000 one year from now. What end of month payment made for the next twelve months would completely pay off this debt if the creditor agrees to an interest rate of 11% compounded monthly?

Academic Success Centre   www.rrc.mb.ca/asc
These questions were compiled by Michael Reimer for the Academic Success Centre.

12. Betty bought a car priced at $12,000. She made a down payment of $2,000 and agreed to pay the balance in 60 equal monthly payments. If she was charged 9% compounded monthly, what should be the amount of each payment?

13. Jon is saving his money so that he can buy a car in three years' time worth $9,000. If his first monthly deposit today and he earns 8% compounded monthly, what would be the size of his monthly deposits?

14. Phil bought a boat priced at $22,000 for 20% down and the balance in equal end of month payments over five years at 22% compounded monthly. What does Phil have to pay each month?

15. You have taken out a $10,000 loan and you are repaying it with semiannual payments of $1,200 each. Interest on the loan is 9% compounded semiannually. How long will it take to pay off the loan if the first payment is made six months after the date of the loan?

16. How long will it take to save at $20,000 by making deposits of $300 starting three months from now into a special savings account earning 7% compounded monthly?

17. A large screen television priced at $1,057.53 was paid for by 12 monthly payments of $100 with the first payment made on the date of purchase. What annual interest rate compounded monthly was charged?

18. Deposits of $5,000 are made at the beginning of every three months for five years to a fund which pays 10% compounded monthly. How much will be in the fund after five years?

19. Semiannual deposits of $500 are made to a fund which pays interest of 8.5% compounded quarterly. How much is in the fund immediately after the twentieth deposit?

20. Today, Meg has $35,000 in a special savings account which pays 9.5% compounded monthly. If she decides to withdraw $1.600 every three months beginning three months from today, for how long can Meg made withdrawals? Include the final partial payment.

21. What single payment now is equivalent to making 36 quarterly payments of $1,250? The first quarterly payment is three months from now and interest is 5.5% compounded monthly.

22. How large a fund is required now for the awarding of annual scholarships in perpetuity of $1,500 beginning one year from now if the fund can earn 8% compounded annually?

23. Dr. Brown's will stipulates that $1,000,000 be set aside to pay his wife a monthly stipend in perpetuity for as long as she lives. Once his wife passes away, the money will go towards cancer research. If the fund can be invested at 7. 25% compounded annually, how much will his wife get?

24. A $50,000 loan is amortized by monthly payments over 15 years. The interest rate charged is 13% compounded quarterly. How much interest will have been paid at the during the first three years?

25. A $195,000 mortgage is amortized by monthly payments over 25 years. Interest is 8.5% compounded semiannually. How much principal balance will you reduce during year 13?

26. A $6,000 loan is to be amortized by equal payments at the end of each month for 3 years. The interest rate is 10% compounded monthly. How much interest is paid during the 22nd payment?

27. A $60,000 loan at 12% compounded semiannually is to be repaid by monthly payments of $1,000 beginning one month after the date of the loan. What is the size of the final payment?

28. The following three choices are available in order to settle an obligation:
    #1 – Pay $20,000 today,
    #2 – Pay 40 quarterly payments of $1,000 beginning now, or,
    #3 – Pay $5,000 today and $16,000 one year from now.
    If money is worth 15% compounded quarterly, from the point of view of the individual paying the money, which alternative is best?

29. A machine can be leased for five years at $3,000 per month payable in advance. Alternatively, it can be purchased for $150,000 and sold for $10,000 in five years. Should the machine be purchased or leased if the firms cost of borrowing is 10% compounded annually? How much would you save by choosing the cheaper option?

30. The development of a new product requires an immediate investment of $100,000 and $40,000 at the end of each of the next four years. Net annual returns of $25,000 commencing four years from now are expected. The company also expects ten years of these annual returns. The product will be sold at the end of year 13 for $50,000. If the company requires a rate of return of 10% compounded annually, what would be the net present value and should the development of this product be undertaken?