



Supplemental Instruction Handouts

# Business Math

## Review of Chapters

### 12, 13, 14, 15 & 16

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**Use this information for the next two questions:**

*Your company would like you to set up a sinking fund so that in ten years the company will have \$500,000.*

1. If the fund can earn 7% compounded annually, how much must each deposit be at the end of each year?
2. How much would be in the sinking fund immediately after the 4<sup>th</sup> payment?

**Use this information for the next two questions:**

*You have just taken out a six year loan for \$10,000. You are planning on making quarterly payments to pay off the loan. The bank will charge you an interest rate of 5.8% compounded semiannually.*

3. How much of the 15<sup>th</sup> payment is interest?
4. What amount was paid towards the principal in year 2?

**Use this information for the next two questions:**

*Your company is looking at two options for a building that will be required by your business for the next five years. Your company can buy the building today for a payment of \$50,000. Your company can also lease the building for the next five years by making beginning – o f – the – month payments of \$1,000 at an interest rate of 8% compounded quarterly.*

5. Should you purchase or lease the building?
6. How much money would you save with the choice you made?

**Use this information for the next two questions:**

*You are going to invest \$15,000 of your money into an RRSP today for the next five years. At the time the RRSP comes due, you will then withdraw the money and purchase a GIC so that you can receive monthly payments of \$400 beginning on that date.*

7. If both investments pay you an interest rate of 11% compounded quarterly, how many monthly withdrawals can you take out?
8. How much interest did you earn?
9. How much can you withdraw at the beginning of every three months from a fund of \$125,000 over the next 25 years at an interest rate of 8.2% compounded quarterly?

**Use this information for the next two questions:**

*You have just purchased a house with a \$120,000 mortgage. The mortgage requires you to make monthly payments over a 25 year period. The mortgage starts with an interest rate of 8.5% compounded monthly for the first five years. After the first five years the mortgage is renewable at 8.2% compounded quarterly.*

10. What is the size of the monthly payments for the first five years?
11. How much is the principal reduced by after the first five year term?
12. Alice would like to set up a fund for her daughter's university education. Her daughter will start university five years from today. Alice wants her to be able to make 48 monthly withdrawals of \$800 from the fund starting the date she enters university. If the interest rate is 10% compounded quarterly, how much must Alice deposit in the fund today?
13. You would like to buy a \$1,000 bond on December 8<sup>th</sup>, 2008. The bond has a coupon rate of 6.5% semiannually and will become due on January 1<sup>st</sup>, 2015. What is the purchase price of the bond if the current market rate is 5.8% compounded semiannually?

**Use this information for the next two questions:**

*You wish to accumulate \$550,000 in ten years. To do this, you will be making deposits of \$3,500 at the beginning of every month.*

14. What semiannual rate of interest did you receive? (Round to 2 decimals)

15. What is the effective rate of interest? (Round to 2 decimals)

**Use this information for the next two questions:**

*You would like to buy a \$25,000 bond with a coupon rate of 4.6% compounded semiannually. The bond has seven years remaining until maturity.*

16. What is the price of this bond if the market rate is 5.5% compounded semiannually?

17. Was this bond sold at a premium or discount? How much is the premium or discount?

18. How many payments would be required on a loan of \$4,000 that requires payments at the beginning of every month of \$200 if the interest rate is 5.6% compounded quarterly?

19. Huron Charters can purchase a sailboat for \$100,000 down and a \$60,000 payment due in one year. The boat would generate additional annual operating profits of \$24,000 for the first five years and \$15,000 for the next five years. New sails costing \$16,000 would be required after five years. After ten years the boat would be replaced. It has a resale value of \$60,000. Should Huron purchase the sailboat if its cost of capital is 13% compounded annually?

20. How much would the annual scholarship payments be if Mrs. Burns put \$25,000 into a fund earning 5.83% compounded annually?

21. How much is required in a scholarship fund to be able to make scholarship payments of \$1,500 annually at an interest rate of 8.49% compounded annually?

22. If you wish to receive payments of \$1,200 per month for 15 years when you retire, how much would you have to invest today, 30 years before you retire? The rate of return for the whole question is 7.93% compounded quarterly.