

FINN 3261
Real Estate Finance
Sample Problems #1

1. What is the future value in five years of \$500 invested today at 10% with annual compounding?

2. What is the future value in five years of \$500 invested today at 10% with monthly compounding?

3. What is the future value in five years of \$100 invested every year at 10% interest with annual compounding? Assume each \$100 payment is invested at the END of the year.

4. What is the future value in five years of \$100 invested every year at 10% interest with annual compounding? Assume each \$100 payment is invested at the BEGINNING of the year (Example: the investment period begins January 1, 2005 with a \$100 deposit and ends December 31, 2009).

5. What is the future value in five years of \$100 invested every year at 10% interest with monthly compounding? Assume each \$100 payment is invested at the BEGINNING of the year (Example: the investment period begins January 1, 2005 with a \$100 deposit and ends December 31, 2009).

6. What is the present value of \$1000 to be received in 5 years? Assume an interest rate of 4.3% with quarterly compounding.

7. A bond will pay \$25 every six months for the next three years. At the end of the third year, you will receive principal of \$1000 in addition to the coupon. What is the present value of the bond, assuming $r = .08$?

8. What is the present value of an annuity paying \$1000 annually for five years, beginning in 10 years. Assume an interest rate of 10% and annual compounding.

9. If Jason graduates from UNCC at the age of 21 and begins saving \$300 a month at a rate of 7% compounded monthly, how much will he have saved by the age of 31?

10. At the age of 31 Jason takes 50,000 of his savings and makes a 20% down payment on a \$250,000 new house. He gets a 6.5% fixed rate, 30 year mortgage from Community Bank of Charlotte. What are his monthly payments?

11. The Community Bank of Charlotte immediately decides to sell Jason's loan to Wells Fargo. How much will Wells Fargo pay for Jason's loan to achieve a yield of 6.25%?

12. In ten years, Jason's house appreciates at a steady rate of 5% a year. What is the value of his home in ten years?

13. Jason makes all his monthly mortgage payment and after ten years he has paid down \$30,447.75 of his loan. How much has he paid in interest?

14. Big Bank underwrites a \$90,000,00, ten-year loan with a 20-year amortization on a portfolio of commercial property at an interest rate of 7% compounded monthly. What is the monthly payment?

15. Your best friend needs to borrow \$200. He can begin making monthly payments on the debt in one year. If an appropriate rate of interest is 8%, how large should his payments be to repay you in 12 monthly periods?

16. After one year, your best friend tells you that he can't afford to pay you so much a month. He offers to instead pay you \$1.00 a month FORVER. Assuming this is a perpetual legacy transferable to your heirs, is this a fair offer?

17. How much would you need to save today at 5% to make four annual college tuition payments of \$30,000 beginning in 20 years? Assume annual compounding.

18. What is the present value of \$5000 paid in five years, using a discount rate of 5.5%, compounded monthly?
19. Mr. Jones is interested in replacing the windows in his home. The window salesman tells him that he will save \$1000 a year in utility costs by installing new, energy efficient windows at a cost of \$15,000. The salesman points out that the windows will pay for themselves twice over during their anticipated 30-year lifetime. Assuming an appropriate discount rate of 8% compounded annually, should Mr. Jones install new windows?
20. You purchase an annuity paying \$120 monthly for 20 years at a discount rate of 7.4%. What was the amount of your investment?
21. After ten years you need cash and decide to sell the annuity to your sister-in-law for a lump sum. The current rate of return on investment instruments with similar risk is 6%. What would be a fair price?
22. What is the future value in 100 years of \$1.00 at 5% interest, compounded annually?
23. What is the future value in 100 years of \$1.00 at 5% interest, compounded daily (assume 365-day years)?

24. You have \$8000 to invest for one year and must choice between two investment opportunities. The first pays 6%, compounded semi-annually. The second pays 5.7% interest, compounded quarterly. Assuming equal risk, which investment is the better opportunity?
25. Your company is considering an investment that will have the following year-end cash flows: year 1, \$8000; year 2, \$10,000; year 3, 12,000. The company wants to earn a 15% annual return on its investment. How much should it pay for the investment, assuming quarterly compounding?
26. An investor can make an investment in a real estate development and receive an expected cash return of \$80,000 after six years. After evaluating other alternative, the investor decides that for the given level of risk, an 11% annual return (compounded semi-annually) is appropriate. How much should the investor be willing to pay?
27. If your grandparents give you \$100 every year for your birthday and you put it in a savings account paying 4.5% annually, with annual compounding, how much money will you have on your 21st birthday?
28. If you can afford a \$1300 monthly mortgage payment, what is the largest 15-year mortgage at a fixed 6.2% contract rate you could afford?
29. If you can afford a \$1200 monthly mortgage payment, what is the largest 30-year mortgage at a fixed 6.5% contract rate you could afford?

30. What would the monthly payment be on a \$300,000 30-year mortgage at a fixed contract rate of 7%?

31. If you have been making payments on your 30-year mortgage at a fixed contract rate of 8% for ten years, what percentage of the original mortgage balance have you paid off?