

DEVRY FIN 515 Week 2 Problem Set

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Chapter 4 (pages 132–136):

3. Calculate the future value of \$2000 in

- a. five years at an interest rate of 5% per year;**
- b. ten years at an interest rate of 5% per year; and**
- c. five years at an interest rate of 10% per year.**
- d. Why is the amount of interest earned in part (a) less than half the amount of interest earned in part (b)?**

4. What is the present value of \$10,000 received

- a. twelve years from today when the interest rate is 4% per year;**
- b. twenty years from today when the interest rate is 8% per year; and**
- c. six years from today when the interest rate is 2% per year?**

5. Your brother has offered to give you either \$5,000 today or \$10,000 in 10 years. If the interest rate is 7% per year, which option is preferable?

6. Consider the following alternatives.

i. \$100 received in 1 year

ii. \$200 received in 5 years

iii. \$300 received in 10 years

a. Rank the alternatives from most valuable to least valuable if the interest rate is 10% per year.

b. What is your ranking if the interest rate is only 5% per year?

c. What is your ranking if the interest rate is 20% per year?

8. Your daughter is currently 8 years old. You anticipate that she will be going to college in 10 years. You would like to have \$100,000 in a savings account to fund her education at that time. If the account promises to pay a fixed interest rate of 3% per year, how much money do you need to put into the account today to ensure that you will have \$100,000 in 10 years?

9. You are thinking of retiring. Your retirement plan will pay you either \$250,000 immediately on retirement or \$350,000 5 years after the date of your retirement. Which alternative should you choose if the interest rate is

a. 0% per year;

b. 8% per year; and

c. 20% per year?

14. You have been offered a unique investment opportunity. If you invest \$10,000 today, you will receive \$500 1 year from now, \$1,500 2 years from now, and \$10,000 10 years from now. a. What is the NPV of the opportunity if the interest rate is 6% per year? Should you take the opportunity? b. What is the NPV of the opportunity if the interest rate is 2% per year? Should you take it now?

36. You are thinking of purchasing a house. The house costs \$350,000. You have \$50,000 in cash that you can use as a down payment on the house, but you need to borrow the rest of the purchase price. The bank is offering a 30-year mortgage that requires annual payments and has an interest rate of 7% per year. What will your annual payment be if you sign up for this mortgage?

37. You would like to buy the house and take the mortgage described in Problem 36. You can afford to pay only \$23,500 per year. The bank agrees to allow you to pay this amount each year, yet still borrow \$300,000. At the end of the mortgage (in 30 years), you must make a balloon payment; that is, you must repay the remaining balance on the mortgage. How much will this balloon payment be?

38. You have just made an offer on a new home and are seeking a mortgage. You need to borrow \$600,000. a. The bank offers a 30-year mortgage with fixed monthly payments and an interest rate of 0.5% per month. What is the amount of your

monthly payment if you take this loan? b. Alternatively, you can get a 15-year mortgage with fixed monthly payments and an interest rate of 0.4% per month. How much would your monthly payments be if you take this loan instead?

***A.1.** This problem is from the Appendix to Chapter 4. Your grandmother bought an annuity from Rock Solid Life Insurance Company for \$200,000 when she retired. In exchange for the \$200,000, Rock Solid will pay her \$25,000 per year until she dies. The interest rate is 5%. How long must she live after the day she retired to come out ahead (that is, to get more in value than what she paid in)?