Financial Management: The Time Value of Money (Case 1)

After graduating from Ohio State University with a degree in Finance, Kate Myers took a position as a stock broker with Merrill Lynch in Cleveland. Although she had several college loans to make payments on, her goal was to set aside funds for the next eight years in order to make a down payment on a house. After considering the various suburbs of Cleveland, Kate chose Lakewood as her desired future residency. Based on median house price data, she learned that a three-bedroom, two-bath house currently costs \$98,000. To avoid paying Private Mortgage Insurance (PMI), Kate wanted to make a down payment of 20%. Because it will be eight years before Kate buys a house, the \$98,000 price will surely not be the same in the future. To estimate the rate at which the median house price will increase, she considered the historical price appreciation in Lakewood. In the past, homes appreciated by nearly 4% per annum. Kate was satisfied with this estimation.

Merrill Lynch provides several opportunities for Kate to invest the funds that will be devoted to the purchase of her future home. She feels that a balanced account containing stocks, bonds, and government securities would realistically achieve an annual rate of return of 8%.

Questions:

- 1. Taking into consideration the fact that the \$98,000 home price will grow at 4% per year, what will be the future median home selling price in Lakewood in eight years? What amount will Kate Myers have to accumulate as a down payment if she does decide to buy a house in Lakewood?
- 2. Based on your answer from number 1, how much will have to be deposited into the Merrill Lynch account (which earns 8% per year) at the end of each month to accumulate the required down payment?
- 3. If Kate decides to make end-of-the-year deposits into the Merrill Lynch account, how much would these deposits be? Why is this amount greater than twelve times the monthly payment amount?
- 4. If homes in Lakewood appreciate by 6% per annum over the next eight years instead of the assumed 4%, how much would Kate have to deposit at the end of each month to make the down payment? What if the appreciation is only 2% per year?
- 5. If Kate decided to deposit her down payment funds in less risky certificates of deposit (CDs) earning only 4%, how much would she have to deposit at the end of each month to make the down payment? What if she pursued a more risky investment of growth stocks that have an expected return of 12%?