Time Value of Money: Practice Questions

1. Six years ago, Carolyn put $17,000 in a bank, earning 7% interest annually. Carolyn now wants to use that money towards a down payment on a beach condo in Hilton Head Island, South Carolina. The condo costs $120,000. Carolyn will finance the remaining cost of the condo through a 10-year, 12% APR that requires quarterly payments.
   (a) How much money does Carolyn have available for making a down payment?
   (b) How much of the cost of condo does Carolyn have to finance through the mortgage? Calculate Carolyn’s quarterly payments.
   (c) What would be Carolyn’s quarterly payments, if she took out a 15-year mortgage?

2. Kerri wants to buy a brand-new, 1.3 Gigahertz Athlon-processor based computer with a 21-inch monitor, which costs $2500. She uses her credit card for the purchase. Kerri’s credit card charges 24% APR.
   (a) If she makes monthly payments of $72, how long will it take Kerri to completely pay off her credit card debt?
   (b) How long will it take Kerri to completely pay off, if she pays $97 per month instead?
   (c) If Kerri wants to completely pay off her debt in 2 years, how much money will she have to pay every month?

3. Congratulations! You just won the lottery. The papers say that you won $10 million, but when you read the fine print, you notice that you are not really getting $10 million right now. You have a choice of either getting $8 million now, or receiving $13 million in 10 years, or receiving annual payments of $1 million for 10 years, starting a year from now. The current interest rate on similar investments is 7%. Which option should you choose? Why? (show all calculations)

4. Larry plans to own a villa in the historic coastal city of Kyrenia, Cyprus in five years. He estimates that the villa will cost $450,000. He can earn an annual rate of 36% (APR) on an investment plan, to which he makes monthly contributions. How much should he put aside every month, so that he’ll have $450,000 available in 5 years?

5. A sales associate from Shady Business Practices, Inc. (SBPI) found Mr. Palumbo’s phone number and called him at home at 10:30 pm. He was offered an overseas investment opportunity in the Cayman Islands that will return him $120,000 per year for the next 30 years, for an initial investment of only $300,000. Mr. Palumbo told the sales associate—not in a polite manner and quite explicitly—what he should do with his offer, and hung up the phone. Then, Joe started wondering what kind of annual percentage return (interest) on his investment SBPI was offering. Can you calculate the relevant interest rate?