Time value analysis will be applied in subsequent chapters, so the contents of this chapter are important. Readers should feel comfortable with this material before moving ahead.

Questions

9.1 a. What is an opportunity cost rate?
b. How is this rate used in time value analysis?
c. Is this rate a single number that is used in all situations?

9.2 What is the difference between a lump sum, an annuity, and an unequal cash flow stream?

9.3 Great Lakes Health Network's net income increased from $3.2 million in 2001 to $6.4 million in 2011. The total growth rate over the ten years is 100 percent, while the annual growth rate is only about 7.2 percent, which is much less than 100 percent divided by ten years.
a. Why is the annual growth less than the total growth rate divided by ten?
b. Which growth rate has more meaning—the total rate over ten years or the annualized rate?

9.4 Would you rather have a savings account that pays 5 percent compounded semiannually or one that pays 5 percent compounded daily? Explain your answer.

9.5 The present value of a perpetuity is equal to the payment divided by the opportunity cost (interest) rate: PV = PMT ÷ I. What is the future value of a perpetuity?

9.6 When a loan is amortized, what happens over time to the size of the total payment, interest payment, and principal payment?

9.7 Explain the difference between the stated rate, periodic rate, and effective annual rate.

9.8 What are three techniques for solving time value problems?

9.9 Explain the concept of return on investment (ROI) and the two different approaches to measuring ROI.

Problems

9.1 Find the following values for a lump sum assuming annual compounding:
a. The future value of $500 invested at 8 percent for one year
b. The future value of $500 invested at 8 percent for five years
c. The present value of $500 to be received in one year when the opportunity cost rate is 8 percent
d. The present value of $500 to be received in five years when the opportunity cost rate is 8 percent

9.2 Repeat Problem 9.1 above, but assume the following compounding conditions: