Name: _____ Date: _____

7.3 Present Value

BLM 7–4

1. A new car costs $30 000 today. Assuming an average annual inflation rate of 2.5% per year, compounded annually, how much would a similar car have cost 15 years ago?

2. In 10 years, Cindy wants her investment to reach $40 000 for a down payment on a small home. She has three investment options:
Plan A: 6% annual interest, compounded yearly
Plan B: 5% annual interest, compounded semi-annually
Plan C: 4.5% annual interest, compounded monthly
a) Calculate the present value of each option to determine the amount that Cindy would need to invest today to have her down payment in 10 years.
b) Which plan should Cindy choose?

3. The future value of a $2500 investment is $3000 after 3 years earning compound interest that is paid semi-annually. What is the annual rate of interest on the investment?

4. Morris's parents would like to retire in 20 years with a total of $400 000. How much would they need to invest today at 6% annual interest, compounded monthly, to have that amount?

5. A school soccer team needs $9000 in 2 years to travel to a tournament in Florida. The team decides to have a fundraising event now and puts the money into an investment that will earn interest at 5% per year, compounded semi-annually.
a) How much does the team need to raise?
b) How much interest will be paid?

6. How much does Samantha need to invest today to have $35 000 in 10 years, if she invests her money at 8.25% interest per year, compounded monthly?

7. a) Predict the effect of doubling the amount wanted at the end of an investment, on the present value of the investment.
b) Justify your answer to part a) using the present value formula.
c) Give an example to demonstrate your prediction.
d) Does doubling the amount of time for an investment have the same effect on the present value as doubling the amount wanted at the end of the investment? Justify your answer with an example.

8. Five years ago, Austin invested $7000 at an annual interest rate of 6%, compounded quarterly. He now takes this amount, plus an additional amount, and invests the total in an investment that pays 6.4% interest annually, compounded monthly, for 7 more years. He will have a total of $16 500 at the end of the 7 years.
a) What is the value of Austin's initial investment at the end of the 5-year period?
b) What is the present value of the 7-year investment?
c) How much does Austin need to add today to the investment?

9. Jordan invested money in an account that paid interest of 8% per year, compounded semi-annually, for 6 years. At the end of the 6 years, he has a total of $24 015.48.
a) What was Jordan's initial investment?
b) How much interest was paid?
c) What approximate annual interest rate would have been needed for the same present value and future value, if interest had been paid monthly instead of semi-annually?

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