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Chapter 7 Review

7.1 Simple Interest

1. Determine the amount that a $5000 investment is worth after 15 years at 8% simple annual interest.

2. Ashley borrows $1200 for 2 years. At the end of that time, she pays back the $1200 along with $108 in interest. If interest was calculated using the simple interest formula, what was the annual rate used for the loan?

3. How long will it take an investment of $200 to double if simple interest is paid at 5% annually?

7.2 Compound Interest

4. An investment of $4000 is made in a bond that pays 4% annual interest, compounded quarterly. Determine the value of the bond at the end of 5 years.

5. By calculating the amount of interest paid for an investment of $1000, determine which investment would be better: 4% annually, compounded semi-annually for 10 years, or 6% annually, compounded annually for 7 years?

6. Louise invests $5000 in an investment that pays 6% annually, compounded monthly.

a) Complete the table of values for the investment.

Time (years)	Amount ($)
0	
1	
2	
3	
4	
5	

b) Graph the information from the table of values.

c) Describe the shape of the graph and explain how the shape illustrates the benefit of compound interest versus simple interest at the same annual rate.

d) What is the vertical intercept and what does it represent?

7. How long, to the nearest month, will it take Melissa's investment of $2500 to double if she invests the money in an account that has an annual interest rate of 8%, compounded semi-annually?

7.3 Present Value

8. What annual rate of interest is being paid if $14 000 invested today will have a future value of $15 500 at the end of 5 years, with interest being paid quarterly?

9. To the nearest month, how long must an amount with a present value of $5000 be left in an account paying 6.1%, compounded semi-annually, for the investment to have a future value of $8000?

10. David, who plans to go to university in 4 years, estimates that he will need $40 000. He is considering two investment options:
Option A: 5.1% per year, compounded semi-annually
Option B: 4.9% per year, compounded quarterly

a) Determine the present value of each investment.

b) Which option should David choose?

11. Suppose that the annual interest rate over the past 15 years has been 2.8%. Assuming that the interest rate has an annual compounding effect on the price of goods, how much would a bicycle have costs 15 years ago if it costs $675 today?

978-0-07-000985-1

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7.4 Annuities

12. Emily plans to deposit $800 at the end of every month into an account that will pay her 6% interest annually, compounded monthly, starting the month after she turns 16. Will Emily become a millionaire by her 45th birthday? Explain.

13. Sanjay hears about Emily's plans and wants to invest in the same plan. However, he starts his $800 deposits the month after he turns 20. When he turns 45, how much less will he have than Emily at that age?

14. How much must be invested every 3 months for an annuity that pays 8% interest per year, compounded quarterly, for 20 years to grow to a value of $232 526.35?

7.5 Present Value of an Annuity

15. How much can be drawn from an annuity at the end of each year for the next 10 years if $50 000 is deposited into an account today that pays 5.5% annual interest, compounded yearly?

16. Angela plans to withdraw $2000 every 6 months from an annuity for the next 10 years. The account pays 6.2% annual interest, compounded semi-annually. How much must Angela deposit into the annuity for the payment schedule to be possible?

17. Rayanna's father plans to give her monthly payments for the next 4 years as she attends university. Her father placed $20 000 into the annuity that pays 6% interest annually, compounded monthly. How much will Rayanna get each month?

978-0-07-000985-1