

6.4.1: Miscellaneous Application Problems (Exercises)

SECTION 6.4 PROBLEM SET: MISCELLANEOUS APPLICATION PROBLEMS

For problems 1 - 4, assume a \$200,000 house loan is amortized over 30 years at an interest rate of 5.4%.

1) Find the monthly payment.	2) Find the balance owed after 20 years.
3) Find the balance of the loan after 100 payments.	4) Find the monthly payment if the original loan were amortized over 15 years.

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5) Mr. Patel wants to pay off his car loan. The monthly payment for his car is \$365, and he has 16 payments left. If the loan was financed at 6.5%, how much does he owe?	6) An amount of \$2000 is borrowed for a year at a rate of 7%. Make an amortization schedule showing the monthly payment, the monthly interest on the outstanding balance, the portion of the payment going toward reducing the debt, and the balance.
7) Fourteen months after Dan bought his new car he lost his job. His car was repossessed by his lender after he made only 14 monthly payments of \$376 each. If the loan was financed over a 4-year period at an interest rate of 6.3%, how much did the car cost the lender? In other words, how much did Dan still owe on the car?	8) You have a choice of either receiving \$5,000 at the end of each year for the next 5 years or receiving \$3000 per year for the next 10 years. If the current interest rate is 9%, which is better?
9) Mr. Smith is planning to retire in 25 years and would like to have \$250,000 then. What monthly payment made at the end of each month to an account that pays 6.5% will achieve his objective?	10) Assume Mr. Smith has reached retirement and has \$250,000 in an account which is earning 6.5%. He would now like to make equal monthly withdrawals for the next 15 years to completely deplete this account. Find the withdrawal payment.
11) Mrs. Garcia is planning to retire in 20 years. She starts to save for retirement by depositing \$2000 each quarter into a retirement investment account that earns 6% interest compounded quarterly. Find the accumulated value of her retirement savings at the end of 20 years.	12) Assume Mrs. Garcia has reached retirement and has accumulated the amount found in question 13 in a retirement savings account. She would now like to make equal monthly withdrawals for the next 15 years to completely deplete this account. Find the withdrawal payment. Assume the account now pays 5.4% compounded monthly.

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13) A ten-year \$1,000 bond pays \$35 every six months. If the current interest rate is 8.2%, find the fair market value of the bond. Hint: You must do the following. a) Find the present value of \$1000. b) Find the present value of the \$35 payments. c) The fair market value of the bond = $a + b$	14) Find the fair market value of the ten-year \$1,000 bond that pays \$35 every six months, if the current interest rate has dropped to 6%. Hint: You must do the following. a) Find the present value of \$1000. b) Find the present value of the \$35 payments. c) The fair market value of the bond = $a + b$
15) A twenty-year \$1,000 bond pays \$30 every six months. If the current interest rate is 4.2%, find the fair market value of the bond. Hint: You must do the following. a) Find the present value of \$1000. b) Find the present value of the \$30 payments. c) The fair market value of the bond = $a + b$	16) Find the fair market value of the twenty-year \$1,000 bond that pays \$30 every six months, if the current interest rate has increased to 7.5%.

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17) Mr. and Mrs. Nguyen deposit \$10,000 into a college investment account when their new baby grandchild is born. The account earns 6.25% interest compounded quarterly.

a) When their grandchild reaches the age of 18, what is the accumulated value of the college investment account?

b) The Nguyen's grandchild has just reached the age of 18 and started college. If she is to withdraw the money in the college savings account in equal monthly payments over the next 4 years, how much money will be withdrawn each month?

18) Mr. Singh is 38 and plans to retire at age 65. He opens a retirement savings account.

a) Mr. Singh wants to save enough money to accumulate \$500,000 by the time he retires.

The retirement investment account pays 7% interest compounded monthly. How much does he need to deposit each month to achieve this goal?

b) Mr. Singh has now reached at 65 and retires.

How much money can he withdraw each month for 25 years if the retirement investment account now pays 5.2% interest, compounded monthly?

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