

# Applications

*Loans and debts make worries and frets.*

Traditional Proverb

1. How might the quote apply to what you have learned?
2. What is the total interest on a ten-year 6.1% loan with a principal of \$32,000?
3. Jamie wants to borrow \$15,000 from South Western Bank. They offered her a 4-year loan with an APR of 5.5%. How much will she pay in interest over the life of the loan?
4. Charlie and Kathy want to borrow \$20,000 to make some home improvements. Their bank will lend them the money for 10 years at an interest rate of  $5\frac{3}{4}\%$ . How much will they pay in interest?
5. Devon is considering taking out a \$7,000 loan. He went to two banks. Stevenson Trust Company offered him an 8-year loan with an interest rate of 8.6%. First National Bank offered him a 5-year loan with an interest rate of 10%. Which loan will have the lower interest over its lifetime?
6. A bank offers a \$25,000 loan at an interest rate of 7.7% that can be paid back over 2 to 10 years.
  - a. Write the monthly payment formula for this loan situation. Let  $t$  represent the number of years from 2 to 10 inclusive.
  - b. Write the total interest formula for this loan situation. Let  $t$  represent the number of years from 2 to 10 inclusive.
  - c. Construct a graph. Let the independent variable represent years and the dependent variable represent the interest paid.
  - d. Use your graph to estimate the interest for a  $6\frac{1}{2}$ -year loan.
7. Jennifer wants to borrow \$20,000. Her bank offers a 7.1% interest rate. She can afford \$500 a month for loan payments. What should be the length of her loan to the nearest tenth of a year?
8. Louis wants to take out a \$14,000 loan with a 6.8% APR. He can afford to pay no more than \$400 per month for loan payments. What would be the length of his loan? Round to the nearest tenth of a year.
9. Use your answer and the loan information from Exercise 8 to determine what effect a \$50 decrease in Louis' monthly payment would have on the length of his loan.
10. Dave wants to borrow \$22,000 from First Finance Bank. The bank will give him a 15-year loan at an interest rate of 4.85%. How much will he pay the bank in interest over the life of the loan? Round to the nearest hundred dollars.