

1. Mc Frugal Snack Shops plan to hire two public relations firms to survey 500 customers by phone, 750 by mail, and 250 by in-person interviews. The Garcia firm has personnel to do 10 phone surveys, 30 mail surveys, and 5 interviews per hour. The Wong firm can handle 20 phone surveys, 10 mail surveys and 10 interviews per hour. For how many hours should each firm be hired to produce the exact number of surveys needed?
2. An animal breeder can buy four types of tiger food. Each case of Brand A contains 25 units of fiber, 30 units of protein and 30 units of fat. Each case of Brand B contains 50 units of fiber, 30 units of protein, and 20 units of fat. Each case of Brand C contains 75 units of fiber, 30 units of protein, and 20 units of fat. Each case of Brand D contains 100 units of fiber, 60 units of protein, and 30 units of fat. how many cases of each brand should the breeder mix together to obtain a food that provides 1200 units of fiber, 600 units of protein, and 400 units of fat?
3. An investment firm recommends that a client invest in AAA, A, and B rated bonds. The average yield on AAA bonds is 6%, on A bonds 7%, and on B bonds 10%. The client wants to invest twice as much in AAA bonds as in B bonds. How much should be invested in each type of bond if the total investment is \$25,000, and the investor wants an annual return of \$1810 on the three investments?
4. Chalon Bridges deposits semiannual payments of \$3200 received in payment of a debt, in an ordinary annuity at 6.8% compounded semiannually. Find the final amount in the account and the interest earned at the end of 3.5 years.
5. In 1995, Oseola McCarthy donated \$150,000 to the University of Southern Mississippi to establish a scholarship fund. What is unusual about her is that the entire amount came from what she was able to save each month from her work as a washerwoman, a job she began in 1916 at the age of 8, when she dropped out of school. How much would Ms. McCarthy have to put into her savings account at the end of every 3 months to accumulate \$150,000 over 79 years? Assume that she received an interest rate of 5.25% compounded quarterly.
6. The Taggert family bought a house for \$91,000. They paid \$20,000 down and took out a 30 year mortgage for the balance at 9%.
  - (a) Find their monthly payment.
  - (b) How much of the first payment was interest?

After 180 payments, the family sells their house for \$136,000. They must pay closing costs of \$3700 plus 2.5% of the sale price.
  - (c) Estimate the current mortgage balance at the time of the sale.
  - (d) Find the total closing costs
  - (e) Find the amount of money they receive from the sale after paying off the mortgage.

7. The *New York Times* posed a scenario with two individuals, Sue and Joe, who each have \$1200 a month to spend on housing and investing. Each takes out a mortgage for \$140,000. Sue gets a 30-year mortgage at a rate of 6.625%. Joe gets a 15-year mortgage at a rate of 6.25%. Whatever money is left after the mortgage payment is invested in a mutual fund with a return of 10% annually.
- (a) What annual interest rate, when compounded monthly, gives an effective annual rate of 10%?
  - (b) What is Sue's monthly payment?
  - (c) If Sue invests the remainder of her \$1200 each month after the payment you found above, in a mutual fund with the interest rate found in (a), how much money will she have in the fund at the end of 30 years?
  - (d) What is Joe's monthly payment?
  - (e) If Joe invests the remainder of his \$1200 each month after the payment you found above, in a mutual fund with the interest rate found in (a), how much money will he have in the fund at the end of 30 years?
  - (f) Who is ahead at the end of 30 years and by how much? (Remember to calculate the interest they must pay, also)