1. Janice was given a piggy bank on her seventh birthday, and she put it to use immediately. Each time she puts one or more coins into the piggy bank, she keeps track of the number of coins she has collected to date and the accumulated value of her collection. Janice collects only nickels, dimes, and quarters. Six months after her seventh birthday, Janice looked at her record and ascertained that she had collected 300 coins, which were worth $42.
    a. How many combinations of coins are possible in Janice's collection?

    b. Janice counted 100 quarters in her savings. How many nickels and dimes are in her collection?

2. Mr. and Mrs. Garcia have a total of $100,000 to be invested in stocks, bonds, and a money market account. The stocks have a rate of return of 6%/year, while the bonds and the money market account pay 4%/year and 2%/year, respectively. The Garcias have stipulated that the amount invested in stocks should be equal to the sum of the amount invested in bonds and 3 times the amount invested in the money market account. How should the Garcias allocate their resources if they require an annual income of $5,000 from their investments? Give two specific options. (Let x_1, y_1, and z_1 refer to one

option for investing money in stocks, bonds, and the money market account respectively. Let x_2, y_2, and z_2 refer to a second option for investing money in stocks, bonds, and the money market account respectively.)

3. Determine the value of k such that the following system of linear equations has infinitely many solutions, and then find the solutions. (Express x, y, and z in terms of the parameters t and/or s.)

$$3x + 2y - z = 8$$
$$4x - 4z = 8$$
$$y + k\,z = 1$$