

**Directions:**

1. Use a typed cover page with the title, “Pre-Calculus” and sub-title, “System of Equations”, your name, your class period, and some printed images that related to the sub-title. (5 points)
2. Label each question clearly. .
3. Answer no more than 3 questions on each side of the page.
4. Show all work to receive credit. **No work no credit!!!**
5. Use graph paper for graph.
6. Work must relate to your answers.
7. Your grade will be given based on the accuracy and completeness of your assignment.
8. For each question:
  - (a) Define the variables
  - (b) Write a system of equations
  - (c) Solve the system
  - (d) Answer the question
9. Remember: This is not homework; this is a **Project!** Take your time to work on it!

**No late assignment.**

**Textbook Ch 12.1 & 12.2 (or use the questions on next page)**

**P789-790**

1. #38
2. #40
3. #42
4. #44
5. #46

**P803**

**You may use any method to solve the following questions**

6. #38
7. #40
8. #42
9. #46
10. #48

## Project 4

1.

One parcel of land is worth \$100,000 now and is increasing in value at the rate of \$3000 per year. A second parcel is now worth \$60,000 and is increasing in value at the rate of \$7500 per year.

- For each parcel of land, write an equation that expresses the value  $y$  of the land in year  $x$ .
- Graph the equations in part a.
- Where do the lines intersect? What is the significance of this point?
- Which parcel will be worth more in five years? in 15 years?

2.

The sum of two numbers is 40. The difference of twice the first number and the second is 11. What are the numbers?

3.

A theater charges \$4 for main floor seats and \$2.50 for balcony seats. If all seats are sold, the ticket income is \$2100. At one show, 25% of the main floor seats and 40% of the balcony seats were sold, and ticket income was \$600. How many seats are on the main floor and how many in the balcony?

4.

The death rate per 100,000 population  $y$  in year  $x$  for heart disease and cancer is approximated by these equations:

$$\text{Heart Disease: } 6.9x + 2y = 728.4$$

$$\text{Cancer: } -1.3x + y = 167.5,$$

where  $x = 0$  corresponds to 1970. If the equations remain accurate, when will the death rates for heart disease and cancer be the same? (Source: U.S. Department of Health and Human Services)

5.

A store sells deluxe tape recorders for \$150. The regular model costs \$120. The total tape recorder inventory would sell for \$43,800. But during a recent month the store actually sold half of its deluxe models and two-thirds of the regular models and took in a total of \$26,700. How many of each kind of tape recorder did they have at the beginning of the month?

6.

A collection of nickels, dimes, and quarters totals \$8.20. The number of nickels and dimes together is twice the number of quarters. The value of the nickels is one-third of the value of the dimes. How many of each kind of coin are there?

7.

An investor puts a total of \$25,000 into three stocks. She invests some of it in stock A and \$2000 more than one-half that amount in stock B. The remainder is invested in stock C. Stock A rises 16% in value, stock B 20%, and stock C 18%. Her investment in the three stocks is now worth \$29,440. How much was originally invested in each stock?

8.

Tickets to a concert cost \$2 for children, \$3 for teenagers, and \$5 for adults. When 570 people attended the concert, the total ticket receipts were \$1950. Three-fourths as many teenagers as children attended. How many children, adults, and teenagers attended?

9.

Pipes  $R$ ,  $S$ , and  $T$  are connected to the same tank. When all three pipes are running, they can fill the tank in 2 hours. When only pipes  $S$  and  $T$  are running, they can fill the tank in 4 hours. When only  $R$  and  $T$  are running, they can fill the tank in 2.4 hours. How long would it take each pipe running alone to fill the tank?

10.

A stereo equipment manufacturer produces three models of speakers,  $R$ ,  $S$ , and  $T$ , and has three kinds of delivery vehicles: trucks, vans, and station wagons. A truck holds 2 boxes of model  $R$ , 1 of model  $S$ , and 3 of model  $T$ . A van holds 1 box of model  $R$ , 3 of model  $S$ , and 2 of model  $T$ . A station wagon holds 1 box of model  $R$ , 3 of model  $S$ , and 1 of model  $T$ . If 15 boxes of model  $R$ , 20 of model  $S$ , and 22 of model  $T$  are to be delivered, how many vehicles of each type should be used so that all operate at full capacity?