Solving Systems of Linear Equations with 3 Variables:

I)   **Solving Systems with 3 Variables on a TI-83**

1. Enter the system into a Matrix:
Press (Matrix) → move to the right column (EDIT) →Press Enter
Press (3 X 4) for a 3 equation system → enter the coefficients into the Matrix
Press 2nd Quit to exit

2. Solve the Matrix:
Press (Matrix) → Move to the center column, down to (B: rref)→ Press enter
Press (Matrix) → Scroll down the column to which matrix you want to solve and press Enter
                Enter

HW: Solve each of the system:

1a)
$$2x - 5y + 2z = 29$$
$$4x + 3y + z = 13$$
$$3x + 6y + 3z = 3$$

1b)
$$-2x + 2y + 4z = 8$$
$$x + 4y + 3z = 11$$
$$3x + 2y = 7$$

1c)
$$2x + 3y + 2z = -4$$
$$x + y + 4z = 3$$
$$4x - 5y + 6z = 6$$

1d)
$$3x + y - 2z = 13$$
$$2x + 5y + 2z = 6$$
$$2x + y + 2z = 11$$

1e)
$$6x - 4y - 3z = 6$$
$$3x + 2y = 8 + 5z$$
$$2x + 3y = 11 + 3z$$

1f)
$$2x + 2z = 18 + 2y$$
$$2z = 3x + 3y$$
$$5x = 10 + 4y + 6z$$

2. Word problems:
a) The sum of twice the first number, four times the second, and triple the third equals 6. The sum of all three numbers times two is 1.5. The sum of four times the first, four times the second, and five times the third is 6. Find all three numbers

b) The sum of triple the second and four times the third number is equal to the one plus triple the first number. The sum of the first number and triple the second is equal to 12. The sum of twice the first number, the second number, and five is equal to twice the third. Find the numbers.

c) The sum of the first number and twice the second is equal to 12 minus four times the third. The sum of triple the first number and four times the second is equal to five minus the third number. Five times the first number is equal to 4 minus six times the second number. Find the numbers.

d) The daily profit of a clothing kiosk is determined by the equation $p = ax^3 + bx^2 + cx$, where "p" is the profit, and "x" is the cost of each t-shirt. If the t-shirt cost $10, the profit is $800. If the cost is $16, the profit is $992. If the cost is $20, the profit is $600. Find a,b,and c.

Solving Systems of Linear Equations with Fractions:

1. Solve each of the following system of equations: (Find LCD to eliminate denominators)

1a)
$$\frac{3}{4}x + \frac{13}{4}y = \frac{21}{4}$$

$$\frac{1}{4}x + \frac{7}{4}y = \frac{11}{4}$$

1b)
$$\frac{8}{3}x + \frac{7}{2}y = 2$$

$$\frac{7}{3}x + \frac{7}{4}y = 7$$

1c)
$$\frac{5}{3}x + \frac{7}{3}y = 37.50$$

$$\frac{8}{3}x + \frac{4}{5}y = 16$$

1d)
$$\frac{8}{3}x + \frac{7}{2}y = -\frac{4}{50}$$

$$\frac{7}{3}x + \frac{7}{4}y = -2.04$$

1e)
$$\frac{9}{7}x + \frac{2}{3}y = 11$$

$$\frac{3}{14}x + \frac{5}{6}y = 4$$

1f)
$$-\frac{4}{5}x + \frac{-5}{4}y = 3.65$$

$$-\frac{12}{5}x + \frac{5}{2}y = -20.3$$

1g)
$$\frac{3}{14}x + \frac{3}{2}y = \frac{9}{2}$$

$$\frac{8}{7}x + \frac{3}{11}y = \frac{11}{4}$$

1h)
$$\frac{2}{10}x + \frac{4}{5}y = 7$$

$$\frac{6}{5}x = -\frac{6}{10}y$$

2. Word Problems:

a) The first number is twice the second. The sum of five times the first and 1.5 times the second is equal to 17.25. Find the numbers

b) The first number is 8 times smaller than the second. The sum of four times the first and triple the second is 14. Find the numbers.

c) The second number is two less than the first. The sum of half the first number is one third the second is equal to 8.5. Find the numbers.