Lab 5 Chapter 6 & 8   Name:_____

Please show all work in the space provided for credit.

1.) A nutritionist in a nursing home is to arrange a special diet composed of three basic foods. The diet is to include exactly 340 units of calcium, 180 units of iron, and 220 units of vitamin A. The number of units per ounce of each special ingredient for each of the foods is indicated in the table below. How many ounces of each food must be used to meet the diet requirements?

	Units per Ounce			
	food I	food II	food III	total units
Calcium	30	10	20	340
Iron	10	10	20	180
Vitamin A	10	30	20	220

a.) Identify the variables in this problem IN WORDS. **Your answer should clearly indicate the nature or units of what you are solving for, meaning "number of ", "number of pounds", "number of servings" , "amount of money", etc.**

x = _____   y= _____   z = _____

b.)   Determine the system of equations to be solved.

c.) Solve the system of equations using Gauss-Jordan Elimination. Please also show the initial matrix, row operations in order, and the final matrix for credits. State the solution properly.

d.) In at least one complete sentence, answer the question: How many ounces of each food must be used to meet the diet requirements?

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2.) A concession stand at a city park sells hamburgers, hot dogs, and drinks. Three patrons buy the food and drink combinations denoted in the following table. Patron 1 spends $11, patron 2 pays $5 for the food, and the price of the food for patron 3 is $22. Let x, y and z represent the cost for a hamburger, a hot dog, and a drink, respectively. Set up a system of equations to solve for x, y and z. Then, set up the augmented matrix for the system and solve the system.

Patron	Hamburgers	Hot Dogs	Drinks
1	1	1	5
2	0	1	2
3	3	1	11

a.) Determine the system of equations to be solved.

b.) Set up the augmented matrix for the system.

c.) Solve the system of equations using Gauss-Jordan Elimination. Please also show the initial matrix, row operations in order, and the final matrix for credits. State the solution properly.

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3. Lindsey's band has 16 members in the first row, 22 members in the second row, 28 members in the third row, and continues with that pattern for a total of eight rows. How many marchers are there all together? <u>Show the use of sequence and/or series formulas to get credit.</u>

4. Suppose someone offers Melissa a job to work for 30 days. On the first day she will be paid 1¢, on the second day 2¢, on the third day 4¢, on the fourth day 8¢, etc. If Melissa take the job, how much is her total pay for the 30 days. <u>Show the use of sequence and/or series formulas to get credit.</u>

5. Jason runs 1 mile, then he runs ½ mile more, then he runs ¼ mile more, and so on. If he continues this process indefinitely, how far will he run? Will he ever pass the tree 3 miles down the road? <u>Show the use of sequence and/or series formulas to get credit.</u>