

Name \_\_\_\_\_

## Mathematics 1553

Homework 1

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Section H / J

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1. A dietician is preparing a meal consisting of anchovies, bologna, and chili. Each ounce of anchovies contains 2 units of protein, 6 units of fat, and 4 units of carbohydrates. Each ounce of bologna contains 3 units of protein, 4 units of fat, and 1 unit of carbohydrates. Each ounce of chili contains 3 units of protein, 6 units of fat, and 2 units of carbohydrates. The meal must provide exactly 40 units of protein, 78 units of fat, and 34 units of carbohydrates.

Using the information in the problem, write down a system of linear equations that determines the number of ounces of each type of food that is needed for the meal.

Find the augmented matrix corresponding to the system of linear equations you found in the first part, compute its reduced row echelon form (showing all steps).

How many ounces of each type of food are needed for the meal?

If we instead say that the number of units of carbohydrates required is  $h$ , then for which  $h$  is there a solution to the system of linear equations? (*Hint: it is not possible to eat a negative amount of bologna!*)