

**Quiz 1 for Statistics 213**  
**Probability and Decision Theory - Spring 2000**  
**Material Covered: Sections 2.1, 2.2 and 2.3 of workbook and text**  
**For: 28th January**

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an  $8\frac{1}{2}$  by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name (please print): \_\_\_\_\_ . ID Number: \_\_\_\_\_  
last first

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1. [2] The following system of equations,

$$\begin{array}{rccccrcr} x & + & y & + & 2z & = & 90 \\ 5x & + & 5y & + & 10z & = & 450 \\ -x & - & y & - & 2z & = & -90, \end{array}$$

(circle none, one or more)

- (a) has a unique solution.    (b) is inconsistent.    (c) has an infinity of solutions.  
 (d) intersect at one point.    (e) intersect along a line.

2. [2] Consider the following system of equations,

$$\begin{array}{rccccrcr} x & - & 2y & + & 2z & - & 3w & = & -7 \\ 3x & + & 2y & - & z & + & 5w & = & 22 \\ 2x & - & 3y & + & 4z & - & w & = & -3, \\ 3x & - & 2y & - & z & + & 2w & = & 12, \end{array}$$

Solve this system of equations using the rref operation on your calculator:

$(x, y, z, w) = (\text{_____}, \text{_____}, \text{_____}, \text{_____})$

3. [2] A dietitian wishes to plan a meal around three foods. The meal is to include 8800 units of vitamin A, 3380 units of vitamin C, and 1020 units of calcium. The number of units of the vitamins and calcium in each ounce of the foods is summarized in the accompanying table.

	Food I	Food II	Food III
Vitamin A	400	1200	800
Vitamin B	110	570	340
Vitamin C	90	30	60

Determine the amount of each food,  $(x, y, z)$ , the dietitian should include in the meal to order to meet the vitamin and calcium requirements.

$(x, y, z) = (\text{_____}, \text{_____}, t)$

1. [2] (c)

2. [2]  $(x, y, z, w) = (3, 1, -1, 2)$

3. [2]  $(x, y, z) = (10 - \frac{t}{2}, 4 - \frac{t}{2}, t)$