Fall 2012 Math 21 Test 3 Name: _____

Show all necessary work neatly, clearly, and systematically. There are 103 points available.

1. (10:2,2,1,4,1) Consider the following <u>population</u> data:

   4 8 5 6 8 5 7 5 6 5

   Find:

   a. Mean

   b. Median

   c. Mode

   d. Variance

   e. Standard deviation

2. (16:7,2,2,1,3,1) Perform the first extension and second extension on the following frequency distribution of a <u>population</u> data:

x_i	freq (f_i)				
6	2				
7	6				
8	8				
9	4				

   After completing the frequency distribution, answer the following:

   a. mean

   b. median

   c. mode

   d. variance

   e. standard deviation

3. (13:9,1,3) Estimate the mean and standard deviation of the sample data. Extend the table yourself.

Score	Freq.
1 – 7	3
8 – 14	4
15 – 21	9
22 – 28	7
29 – 35	2

4. (20:10,3,7) Five people are randomly selected from a group of 4 men and 4 women. The random variable X is the number of men selected. Create a probability distribution and compute its mean and standard deviation. Round the numbers to 5-decimal places.

5. (13:7,2,4) Extend the table and compute the E(X) and Var(X) of the following probability distribution:

x_i	p_i
3	0.2
4	0.4
5	0.3
6	0.1

6. (10) The latest opinion poll for Proposition 30 shows that 43% support and 40% against such movement, while the rest have no opinion. Consider 6 randomly selected people.
   a. (3) Find the probability that 4 of them will support Proposition 30.

   b. (3) Find the probability that more than 4 of them will be against Proposition 30.

   c. (4) Find the probability that any of those 6 people has/have no opinion.

7. (7:2,3,2) Ben and Frank work on a problem independently. The probability that Ben solves it is 40%, while the probability that Frank solves it is 45%.
   a. Find the probability that both of them cannot solve it?

   b. Find the probability that Ben can but Frank can't solve it?

   c. Given that Frank solves the problem, find the probability that Ben cannot solve it?

8. (14: 3,3,3,5) P(A) = 40%, P(B) = 45%, P(A|B) = 20%. Find
   a. P(A and B)
   b. P(A or B)
   c. P(B|A)
   d. P(B|A')