Math 1431   Spring 2003 – Test #2 – Practice

You are allowed to use your calculator. Explain all answers – answers with no explanation will receive only partial credit. Use complete sentences. Show how you used the calculator to answer the questions below.

Name	Age	Name	Age	Name	Age
William	37	Michael	41	James	28
Jack	39	Kathy	41	Kate	29
Patty	30	Eileen	22	Mary	40
John	45	Joseph	49	Rene	32
Sophie	46	Julia	34	Anthony	35

1. Construct an SRS of 5 from the above list of people. Explain clearly how you constructed the SRS. What is the mean age of your sample?

2. A food company is preparing to market a new cake mix. It is important that the taste of the cake not be changed by small variations in baking time or temperature. In an experiment, cakes are made from the mix are baked at 300 degrees, 320 degrees and 340 degrees F, and for 1 hour and 1 hour and 15 minutes. Ten cakes are baked at each combination of temperature and time. A panel of tasters scores each cake for texture and taste.
(a). What are the experimental units?
(b). What are the explanatory variables and response variables for this experiment?
(c). What are the factors and their levels?
(d). Outline the design of the experiment.

3. Two fair regular six-sided die are rolled. List the sample space. Let X be the sum of the random roll of the die. Find the following probabilities:
(a). P(X<2)   (b). P(X 7)   (c). P(X 11)
(d). P(X<11)   (e). P(X=5)   (f). P(X=5 or X>10)

4. List the sample space of children of a four-child family. Find the following probabilities:
(a). P(exactly 3 boys)   (b). P(exactly 2 girls)
(c). P(at least 2 boys)   (d). P(at most 2 girls)

5. A supervisor has determined that the average salary of employees in his department is $30,000 with a standard deviation of $15,000. A sample of 30 of the employees' salaries was selected at random. Let X be the mean of the sample. Find the following probabilities:
(a). P(X=25,000)   (b). P(X>25,000)
(c). P(20,000<X<30,000)   (d). P(X>35,000)

6. An electron is expelled from a source in the direction of 2 detector devices. The probability that the first device detects the electron is 0.5 and the probability that the second device detects the electron is 0.5. Construct an experiment that will count how many of the first 100 electrons are detected by the first device.