Math 310 - Dr. Miller - Exam #3, Version #1 - Spring 2008

1. *[8 pts]* A survey at United Local School District determined the following: 800 students lived more than 5 miles from school, 200 students lived between 2 and 5 miles from school, and 100 students lived within 2 miles of school. Draw and label a histogram for this data.

2. (a) *[8 pts]* Draw and label a box-and-whisker plot for the data below, where $6 \mid 4 = 64$:

Scores on Exam #5

9	$7, 5, 1$
8	$3, 6, 7, 1, 6$
7	$2, 9, 8, 7$
6	4

(b) *[2 pts]* Find the mean, median, and mode of the above data, telling which is which.

3. *[4 pts - 2 each]* Name the type of statistical graph that would *best* represent each type of data.

   (a) the frequency of grades, including W's and incompletes, in a college history course

   (b) the portion of your school district's tax revenues that goes toward teacher salaries, educational materials, busing, extra-curricular activities, etc.

4. *[4 pts]* Kevin averaged 8.3 on his first 9 quizzes in German class, and 7.1 on the next 6. What was his overall average, rounded to the nearest tenth? Show clear work.

5. *[6 pts]* Sandra got a 58, 67, 75, 72, and 64 on her first five (of six) lab reports in chemistry. What must she earn on the last one in order to get a C (69%) in the course? Explain your reasoning.

6. *[10 pts - 3-4 each]* For each item below, make up a set of 5 numbers between 0 and 100, inclusive, with the given properties. If not possible, verbally explain why.

   (a) mean equals 50, median equals 60

   (b) mean equals 10, median equals 60

   (c) the median changes by more than 10 points when a sixth score of 0 is included

7. *[8 pts]* The weights of chicken eggs are normally distributed with a mean of 1.5 ounces and a standard deviation of 0.5 ounce.

   (a) What percentage of all eggs weigh between 1 and 2 ounces?

   (b) An egg must be in the top 2.5% to be classified as "extra large." Above what weight are eggs considered to be extra large?

8. *[6 pts]* Draw a spinner labelled with the numbers 5, 6, 7, 8, 9 so that all of the following conditions will be true.

   - The probability of landing on an even number is 1/2.
   - The probability of landing on a perfect square is 0.
   - The probability of landing on 5 is half the probability of landing on 7.

9. *[12 pts - 4 each]* Consider the experiment of drawing one card from a complete deck.

   (a) Find the probability that the card is not black and not a face card (jack, queen, king).

   (b) Find the probability that the card is red or has a 2, 4, or 6 on it.

   (c) Find the probability that the card is a king, given that it is higher than an 8.

10. *[16 pts - 4 each]* Consider the experiment of rolling a die and spinning a wheel marked 1, 2, 3.

    (a) List the members of a uniform sample space for this experiment.

    (b) What is the probability that the number on the wheel is at least as large as that on the die?

    (c) What are the odds against getting a sum that's a multiple of 3?

    (d) Interpret these odds verbally, using the phrase "for every."

11. *[4 pts]* The probability that G does not happen is $3/8$. What are the odds in favor of G?

12. *[12 pts - 4 each]* A security code consists of three digits followed by four letters.

    (a) How many different codes are possible if repeated digits and letters are allowed?

    (b) How many different codes use only the letters A, B, or C? (Repeats still allowed.)

    (c) How many different codes do not repeat any digits or letters and also do not use any 3's, 6's, or 9's?