1. *[9 pts]* Consider the stem-and-leaf plot below:

Ages of Clients

```
8 |  2 5
7 |  1 8 3 5
6 |  5 8 8 4 0
5 |  7 9 6 9
4 |  3 6
```
$$Key : 8|4 = 84$$

Make and fully label a box-and-whisker plot for these ages.

2. *[6 pts - 2 each]* Circle the type of statistical graph that would be best for displaying the given type of data.

   (a) Hair colors listed on people's driver's licenses:

           bar graph          line graph          stem-and-leaf plot

   (b) Amount a rainfall each day over the past month:

           bar graph          circle graph          line graph

   (c) Children who turned in Book Reports 1, 2, and/or 3:

           circle graph          pictograph          box-and-whisker plot

3. *[8 pts]* The mean age of the 50 employees at Superstar is 38.2 years. Five new employees are hired, with a mean age of 20.4 years. What is the average age of all employees now, to the nearest tenth? Show clear work, but you need not explain.

4. *[15 pts - 5 each]* Create a list of five scores, from 0 to 100 inclusive, for which the following conditions hold. If not possible, explain why.

   (a) The median is 80 and the mode is 30.

   (b) The mean is 80 and the mode is 30.

   (c) The median is 80 and will change by fewer than 10 points if a sixth score of 0 is included, but will change by more than 10 points is the sixth score ia 100 instead.

5. *[8 pts]* Demonstrate a "count and balance" approach in solving this problem: *Ellen earned 78 out of 100, 85 out of 100, and 76 out of 100 on her music assignments. If she wants to get an 80% in the course, how mnay points must she earn on the 150-pt final exam?*

6. *[8 pts]* Draw and label a single spinner that simultaneously satisfies all of the following conditions:

- The probability of landing on cat, dog, cow, pig, or chicken is 1.
- The probability of landing on an animal that does not lay eggs is 1/2.
- The probability of landing on cat is twice that of landing on dog.
- At least one animal has a probability of 0.

7. An experiment consists of tossing a coin and then spinning one wheel equally marked 1, 2, 3, and then another wheel equally marked 2, 5.

   (a) *[8 pts]* List the members of a uniform sample space for this experiment.

   (b) *[3 pts]* What is the probability that you got heads and exactly 1 odd number?

   (c) *[3 pts]* What is the probability that you got heads or exactly 1 odd number?

   (d) *[3 pts]* What is the probability that you got heads given that you got exactly 1 odd number?

   (e) *[3 pts]* What is the probability that the number on the first wheel is at least as large as that on the second wheel?

8. *[6 pts - 3 each]* The odds against IUP beating SRU are 7:3.

   (a) Rewrite this information, using the phrase "For every."

   (b) What is the probability that IUP doesn't beat SRU?

9. *[12 pts - 4 each]* Security codes at Fordsome Company consist of 2 letters followed by 3 digits and then another letter. (Do not simplify your answers to this question.)

   (a) How many different codes are possible if letters may be repeated but digits may not?

   (b) How many codes allowing both repeated letters and digits do not use the letters x, y, and z?

   (c) How many codes allowing both repeated letters and digits have the first and last letter the same?

10. *[8 pts - 4 each]* How many different rearrangments are there of the letters below? (Do not simplify.)

   (a) OSCAR JUMPED

   (b) ELMO GOES HOME