

Key $\frac{15}{15}$
 Noon
 SWE 115
 Calcs okay, phone no.

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

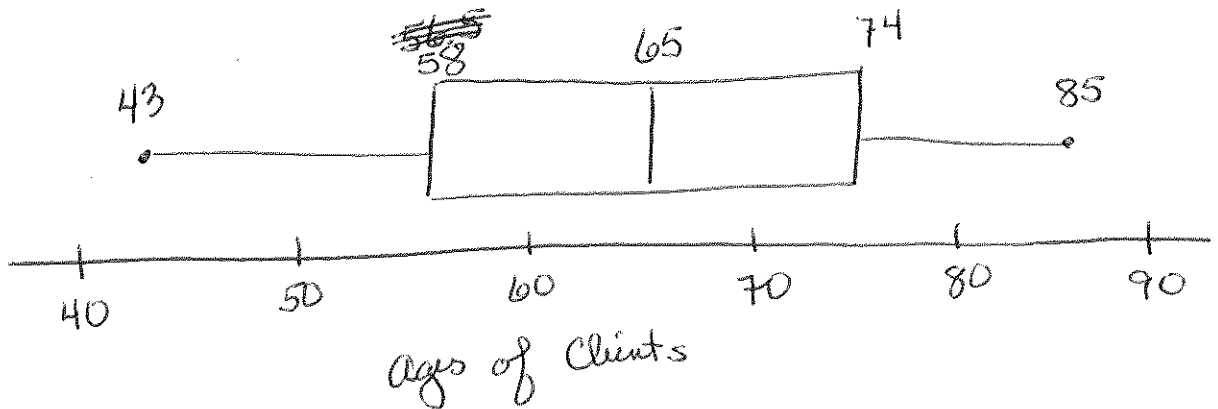
Ages of Clients

8		2 5
7		1 8 3 5
6		(5) 8 8 4 0
5		7 9 6 9
4		3 6

(17 scores)

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
- (-1) circle - some kids would repeat exceed 100%

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.

$$\frac{50(38.2) + 5(20.4)}{55} = 36.6$$

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.

30 30 80 (above 80)

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

Impossible - the total must be 400
with two 30's, the remaining
3 scores must total 340 - too high

(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 if the sixth score is 100 instead.

60+ 80 100 100
 if is

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 many points must she earn on the 150-pt final exam?

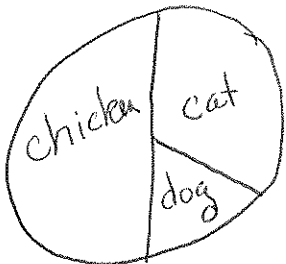
Deficit: 2 + 4 = 6
Surplus: 5
1 pt down

$$80\% \text{ of } 150 = 120 + 1$$

121

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.
- 3 • 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.
- 2 • 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.

- (H, 1, 2)
- (H, 1, 5)
- (H, 2, 2)
- (H, 2, 5)
- (H, 3, 2)
- (H, 3, 5)
- (T, 1, 2)
- (T, 1, 5)
- (T, 2, 2)
- (T, 2, 5)
- (T, 3, 2)
- (T, 3, 5)

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

$$\frac{3}{12}$$

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

$$\frac{9}{12}$$

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

$$\frac{3}{6}$$

(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?

$$\frac{4}{12}$$

$\frac{26}{26}$

good bad: good

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

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

For every 7 times IUP doesn't beat SRU, there are 3 times they do.

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

$$\frac{7}{10}$$

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?

$$26 \cdot 26 \cdot 10 \cdot 9 \cdot 8 \cdot 26$$

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

$$23 \cdot 23 \cdot 10 \cdot 10 \cdot 10 \cdot 23$$

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

$$26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 \cdot 1$$

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

(a) OSCAR JUMPED

$$11!$$

(b) ELMO GOES HOME

$$\frac{12!}{3! \cdot 3! \cdot 2!}$$