Name: Solutions

Student #: _____

STAT 2220 - Quiz #1

January 12, 2012

1. (7 points) The bridge percentage score of a random sample of 18 of Jenna's games are given below.

48	51	52	49	67	49	46	48	59
60	57	61	49	44	56	53	52	43

(a) (1 point) Sort the dataset, then create a stem plot by splitting the stems.

43, 44, 46, 48, 48, 49, 49, 49, 51, 52, 52, 53, 56, 57, 59, 60, 61, 67

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

(b) (2 points) Find the five-number summary.

$\frac{(18+1)}{2} = 9.5$ $\frac{51+52}{2} = 51.5$ $\frac{(9+1)}{2} = 5$ $Q_1 = 48$, $Q_3 = 57$

5-Number summary: 43 48 51.5 57 67

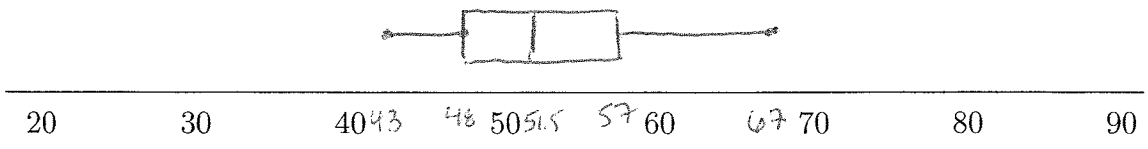
(c) (1 point) An observation would labeled as an outlier if it is less than 34.5 percent or greater than 70.5 percent.

$IQR = Q_3 - Q_1 = 57 - 48 = 9$ $1.5 \times IQR = 9 \times 1.5 = 13.5$

$LF = Q_1 - 1.5 \times IQR = 48 - 13.5 = 34.5$

$UF = Q_3 + 1.5 \times IQR = 57 + 13.5 = 70.5$

(d) (2 points) Construct an outlier boxplot for the dataset.



(e) (1 point) Comment on the shape of the distribution.

Skewed to the right

2. (3 points) For each of the following, determine whether the variable of interest is categorical and nominal, categorical and ordinal, quantitative and ratio, or quantitative and interval. Also indicate if you would use a barplot or a histogram.

histogram → (a) (1 point) Number of chocolate chips in a cookie. Quantitative and ratio

barplot → (b) (1 point) Telephone number. categorical and nominal

barplot → (c) (1 point) Shirt size (small, medium, large). categorical and ordinal

3. (2 points) Suppose on an introductory statistics exam, the grades of the 40 students produced a sample mean of $\bar{x} = 16$ out of 30 and standard deviation of $s = 4$. To make up for the poor performance, the professor added 3 marks to each student's grade. They then doubled everyone's score as the exam was worth 60% of their final grade. What are the new values for the mean and standard deviation?

   (a) (1 point) The new mean is $(16+3) \times 2 = 38$

   (b) (1 point) The new standard deviation is $(4+0) \times 2 = 8$

4. (1 point) Which chart is associated with the 80/20 rule? Pareto chart