6.3 HW Page 199-202 #2-9

2. A lab group for a biology experiment measured the heights of 16 plants after a week of growth. The heights of the plants (in centimeters) are given below.

~~12.7~~, ~~13.1~~, ~~16.5~~, ~~13.3~~, ~~14.8~~, ~~17.0~~, ~~15.9~~, ~~14.6~~, ~~11.7~~, ~~13.4~~, ~~15.3~~, ~~12.8~~, ~~15.3~~, ~~13.6~~, ~~14.2~~, ~~16.7~~

Make a stem-and-leaf diagram for the data.

11.7, 12.7, 12.8, 13.3, 13.4, 13.6, 14.2, 14.6, 14.8, 15.1, 16.3, 15.3, 15.9, 16.5, 16.7, 17.0

11	7
12	7 8
13	3 4 6
14	2 6 8
15	1 3 3 9
16	5 7
17	0

11|7 represents 11.7

3. Name the five values needed to make any box plot.

- Upper and lower extremes (max and min)
- median
- upper and lower quartiles (Q1 & Q3)

4. The data below show the number of hours spent studying last week by ten classmates.

~~6~~, ~~15~~, ~~9~~, ~~5~~, ~~6~~, ~~10~~, ~~8~~, ~~6~~, ~~6~~, ~~8~~

~~3~~, ~~3~~, ~~5~~, ~~5~~, 6 | 8, ~~8~~, ~~9~~, ~~10~~, 15

a. Calculate the median of the data.
b. Identify the lower and upper extremes.
c. Identify the lower and upper quartiles.

a) $\frac{6+8}{2} = 7$

b) lower extreme = 3
upper extreme = 15

c) lower quartile = 5
upper quartile = 9

5. A researcher gathered data on the number of gray hairs on the heads of 25-year-olds. The stem-and-leaf diagram displays the data that she gathered from 40 people who were each 25 years old.

Number of Gray Hairs on the Heads of 25-Year-Olds

0	0
1	
2	
3	
4	
5	
6	

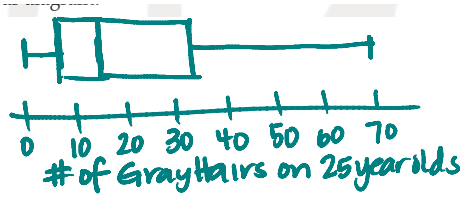
Key: 4 | 5 represents 45 gray hairs.

a. What is the median number of gray hairs for these 40 people? Show or explain how to determine the median.
count from either end of the leaves until you find the middle # or #'s. $\frac{13+15}{2} = 14$

b. What is the range of the number of gray hairs for these people? Show or explain how you obtained your answer.
67 − 0 = 67

c. What are the lower quartile and the upper quartile? Explain how to determine these values.
Q1 = 6.5 Q2 = 32
lower quartile = median of values below median of entire set; upper quartile = median of values above median of entire set

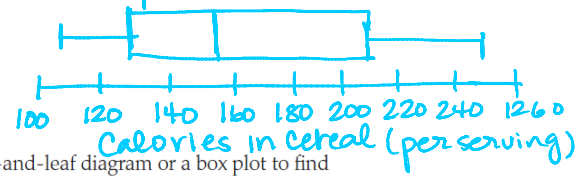
d. Make a box plot that displays the same data as in the stem-and-leaf diagram.



6. Ten brands of cereal contain the following numbers of Calories per serving: 230, 110, 160, 250, 150, 210, 160, 130, 115, and 130. Make a box plot of the data.

lower extreme → 110 115 130 130 150 160 160 210 230 250 ← upper extreme

median = 155
Q1 = 130
Q3 = 210

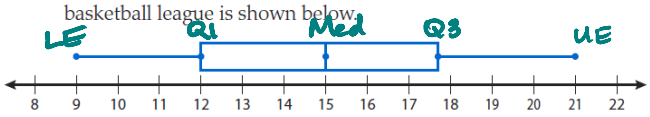


7. Is it possible to use a stem-and-leaf diagram or a box plot to find the mean of a data set? Explain.

It is possible to find the mean of a data set from a stem-and-leaf diagram, b/c all the data points are included in the diagram. It is not possible to find it from a box plot, because it does not contain all of the data...

8. Compare the use of stem-and-leaf diagrams and box plots with dot plots and bar graphs for displaying data. A stem-and-leaf diagram is similar to both dot plots and bar graphs for displaying data, because it shows how all of the data values are distributed. However a stem-and-leaf must be numerical while a bar graph could be categorical. A box plot uses a numerical scale like a dot plot, but does not include all the values.

9. A box plot of the 30 top per-game point scorers in a women's basketball league is shown below.



Based on the data in the box plot, indicate whether each of the following statements *must* be true. Explain your reasoning for each statement.

a. The mean number of points scored in a game is 15 points. False - box plot does not contain info. about mean
b. Half of the top 30 per-game point scorers scored at least 15 points. True - median is 15
c. Only one woman scored 21 points in a game. False - there could be more than one value at upper extreme.
d. Twenty-five percent of the top per-game point scorers scored between 9 and 12 points per game. True - lower quartile contains 1/4 of the data
e. Half of the 30 top per-game point scorers scored between 12 and about 17.7 points per game. True - 1/2 of the data are contained w/i the lower and upper quartiles.
f. The range of the points scored per game in this group of players is 14. False - the range is 21 - 9 = 12