Name_____   *Statistics Chapter 4: Review A*
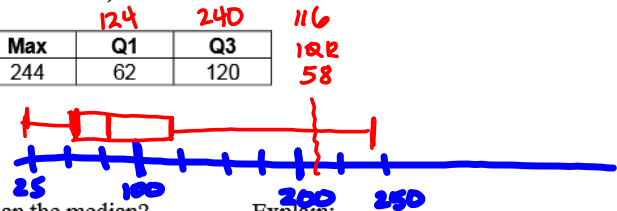
Here are some statistics for the number of beds in 52 nursing homes in New Mexico in 1988
(http://lib.stat.cmu.edu/DASL/Datafiles/nursinghomedat.html)

Median	Range	Min	Max	Q1	Q3
88	219	25	244	62	120

(handwritten: 124, 240, 116, IQR 58)

1. Describe the shape of this distribution.

   Skewed Right

   (handwritten boxplot with number line: 25, 100, 200, 250)

2. Do you expect the mean to be greater or less than the median? _____ Explain:

   mean > median because the skewed higher values will pull up the mean.

3. Are any of the nursing homes outliers? Explain

   Q3-Q1 = 120-62 = 58
   1.5(58) = 87
   Q1-87 = 62-87 = -25
   Q3+87 = 120+87 = 207   at least 1 outlier (244)

4. Imagine that to address a shortage of nursing home beds, the government gave funding to each
   nursing home to each add 20 beds. Describe how each would change:

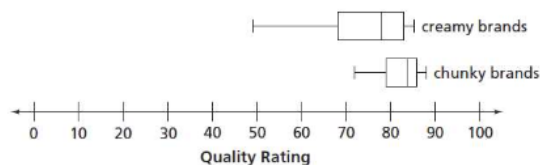| Mean	Std Dev	Median	Range	Min	Max	Q1	Q3	IQR
+20	Same	+20	Same	+20	+20	+20	+20	Same

Spread → stays same

5. Imagine that instead of adding 20 beds to each home, the number of beds in each home is
   doubled. Describe how each would change compared to the original statistics:

Mean	Std Dev	Median	Range	Min	Max	Q1	Q3	IQR
x2	x2	x2	x2	x2	x2	x2	x2	x2

Spreads double

6. The side by side boxplots show consumer ratings of creamy and chunky peanut butter.
   Compare the shapes, centers, and spreads of the two kinds of peanut butter. Which kind of
   peanut better is generally rated better? Justify your choice.

   (boxplots: creamy brands, chunky brands, Quality Rating scale 0-100)

   - both skewed left
   - Median of creamy p.b ~78
     Median of chunky p.b. ~84
   - creamy p.b. ratings are more spread out than chunky

   Chunky p.b. generally rated higher

   More than ½ Chunky p.b. rated higher than top 25% of creamy

4-21

7. Environmental researchers have collected rain acidity data for several decades. They want to see if there is any evidence that attempts to reduce industrial pollution have produced a trend toward less acidic rainfall. They should display their data in a(n)…

A) timeplot   B) contingency table   C) boxplot   D) histogram

8. The United States Census collects data on many variables about individuals and households. Which type of plot would be most appropriate to display the responses to *type of residence*?

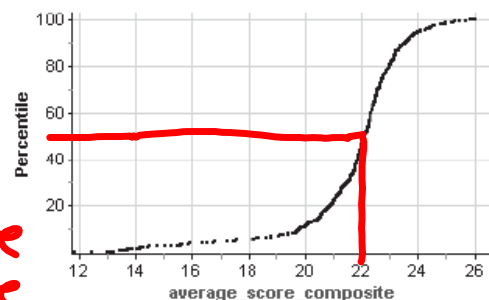A) boxplot   B) timeplot   C) dotplot   D) pie chart   *Categorical data*

9. The average scores for Wisconsin schools on the ACT are summarized in the ogive shown. Estimate the median of the average scores.   *50th %ile*

A) 19   B) 21   C) 22   D) 50

Q1 – 25%ile
Q3 – 75%ile

10. To see if your school's ACT scores are improving since implementing a new program, the ACT scores for the past several years should be displayed in a

A) contingency table   B) bar graph   C) boxplot   D) timeplot