AP Statistics   Problem Set #2   Name_____
You need to show all work and be clear and concise in your explanations

1. **DO GIRLS STUDY MORE THAN BOYS?** A study asking students in three AP Statistics classes
how many hours they studied on a typical weeknight. Here are the responses of random samples of 30 girls
and 30 boys.

Girls					Boys				
180	120	180	360	240	90	120	30	90	200
120	180	120	240	170	90	45	30	120	75
150	120	180	180	150	150	120	60	240	300
200	150	180	150	180	240	60	120	60	30
120	60	120	180	180	30	230	120	95	150
90	240	180	115	120	0	200	120	120	180

(a) Examine the data. Why are you not surprised that most responses are multiples of 30 minutes? A
student was eliminated from the study who claimed to study 30,000 minutes per night. Are there any other
responses you consider suspicious?
(b) Make a back-to-back stemplot of these data. Comment on the graphical display.
(c) Using your calculator, find the numerical summaries ($\bar{x}, s_x$, and the five number summary) for both
sets of data. Are there any outliers? Calculate. Is there anything unusual?
(d) Draw a modified boxplot. Using the boxplot, compare and contrast the study times for boys and girls.
(e) With all the data from above, does there appear that girls study more than boys (or at least that they
claim to)? Explain.

2. $\bar{x}$ **AND s ARE NOT ENOUGH** The mean $\bar{x}$ and standard deviation s measure center and spread but
are not a complete description of a distribution. Use your calculator to find $\bar{x}$ and s for the following two
data sets.

Data A:	9.14	8.14	8.74	8.77	9.26	8.1	6.13	3.1	9.13	7.26	4.74
Data B:	6.58	5.76	7.71	8.84	8.47	7.04	5.25	5.56	7.91	6.89	12.5

(a) What do you notice about the mean and standard deviation for both data sets?
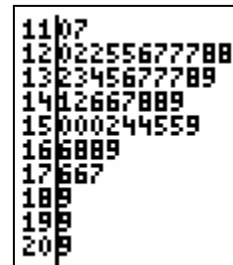(b) Make a back-to-back stemplot and **comment** on the shape of each distribution.

3. **WHO HAS THE RIGHT TIME?** Since Hill Valley High School eliminated the use of bells between
classes, teachers have noticed that more students seem to be arriving to class a few minutes late. One
teacher decided to collect data to determine whether the students' and teachers' watches are displaying the
correct time. At exactly 12:00 noon, the teacher asked 9 randomly selected students and 9 randomly
selected teachers to record the times on their watches to the nearest half minute. The ordered data showing
minutes after 12:00 as positive values and minutes before 12:00 as negative values are shown in the table
below.

Students	-4.5	-3	-0.5	0	0	0.5	0.5	1.5	5
Teachers	-2	-1.5	-1.5	-1	-1	-0.5	0	0	0.5

(a) Construct parallel boxplots using these data.
(b) Based on the boxplots in part (a), which of the two groups, students or teachers, tends to have watch
times that are closer to the true time? Explain your choice.

4. The stemplot displays the 1988 per capita income (in hundreds of dollars)
   of the 50 states. Which of the following best describes the data?

(a) Skewed distribution, mean greater than median
(b) Skewed distribution, median greater than mean
(c) Symmetric distribution, mean greater than median
(d) Symmetric distribution, median greater than mean
(e) Symmetric distribution with outliers on high end

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11|07
12|02255677788
13|2345677789
14|2667889
15|000244559
16|6889
17|667
18|8
19|8
20|8
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5. A study was conducted on the weights of three different species of fish found in a lake in Finland. These three fish (bream, perch and roach) are commercial fish. Their weights are displayed in the boxplots below. Which of the following statements comparing these boxplots is **NOT** correct?

(a) The median weights of the three species differ.
(b) The spread of roach is less than the spread of the other two species.
(c) The distributions of weights are approximately symmetric for all three species.
(d) There are no outliers in weight for the three species.
(e) The variability in the weights for the three species exceeds the variation in the three species' means.
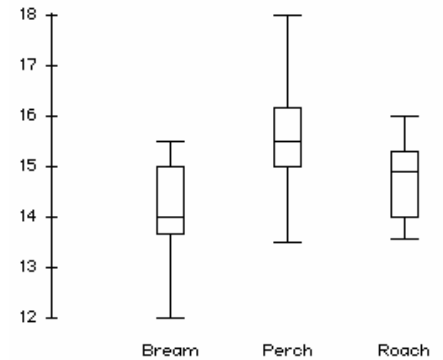
6. For the following histogram, what is the proper ordering of the mean, median, and mode? Note that the graph is NOT numerically precise - only the relative positions are important.
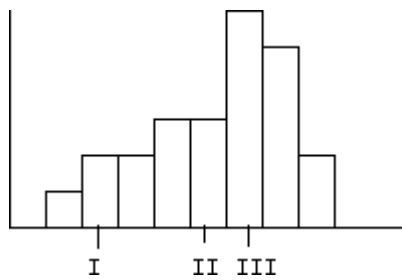
(a) I = mean, II = median, III = mode
(b) I =mode, II = median, III = mean
(c) I = median, II = mean, III = mode
(d) I = mode, II = mean, III = median
(e) I = mean II = mode III = median

7. The following is a histogram showing the actual frequency of the closing prices on the New York exchange of a particular stock. Based on the frequency histogram for New York Stock exchange, the class that contains the 80th percentile is:
   (a) 20-30
   (b) 10-20
   (c) 40-50
   (d) 50-60
   (e) 30-40