AP Statistics Summer Assignment

Welcome to AP Statistics! This is one of the few courses in high school that contain clear connections to all other subject areas and I am glad you have chosen to learn more about it.

Your summer work should be completed in the following order:

1. Check out a textbook from the media center before leaving for summer break. The textbook for this course is called, *The Practice of Statistics, 5th edition*. The textbooks should be ready to checkout beginning Thursday, May 19.

2. Make sure you have a graphing calculator. I recommend the TI-84Plus CE. I will be using a TI-84Plus CE in class to do demonstrations. However, the textbook explains how to do statistics on both the TI-84 and the TI-89, so as long as you have one of these calculators you will be fine.

3. Read Ch. 1 in the textbook and complete the Guided Reading Notes (below).

4. Complete the Ch. 1 AP Statistics Practice Test on pages 78-81 from your textbook. You will have a Chapter 1 test within the first week of returning to school in August and the format of the test will be similar to this practice test.

5. Email me if you have any questions over the summer about your assignment. My email is casham@lee.k12.ga.us

6. Meet me in Room 206 on the first day of school with your completed Guided Reading Notes and your solutions to the CH. 1 AP Statistics Practice Test. This summer work assignment will be your first graded assignment of the 2015-2016 school year.

I look forward to working with you next school year. See you in August!
## Chapter 1: Exploring Data

### Key Vocabulary:

- individual
- variable
- frequency table
- relative frequency table
- distribution
- pie chart
- bar graph
- two-way table
- marginal distributions
- conditional distributions
- side-by-side bar graph
- association
- dotplot
- stemplot
- histogram
- SOCS
- outlier
- symmetric
- \(\Sigma\)
- \(\bar{x}\)
- spread
- variability
- median
- quartiles
- \(Q_1, Q_3\)
- IQR
- five-number summary
- minimum
- maximum
- boxplot
- resistant
- standard deviation
- variance
Data Analysis: Making Sense of Data (pp.2-6)

1. Individuals are…

2. A variable is …

3. When you first meet a new data set, ask yourself:
   - Who…
   - What…
   - Why, When, Where and How…

4. Explain the difference between a *categorical* variable and a *quantitative* variable. Give an example of each.

5. Give an example of a categorical variable that has number values.

6. Define *distribution*:

   Give an example of a distribution:

6. Answer the two questions for the *Check Your Understanding* on pages 4 and 5:

7. Define *inference*. 
1.1 Analyzing Categorical Data (pp.7-19)

1. A frequency table displays…

2. A relative frequency table displays…

3. What type of data are pie charts and bar graphs used for?

4. Categories in a bar graph are represented by __________________ and the bar heights give the category ____________________________.

5. What is a two-way table?

6. Define marginal distribution.

7. Answer the two questions for the Check Your Understanding on page 14.

8. What is a conditional distribution? Give an example demonstrating how to calculate one set of conditional distributions in a two-way table.
9. What is the purpose of using a segmented bar graph?

10. Answer the questions for the Check Your Understanding on page 18.

11. Explain what it meant by an association between two variables; Give an example.
1.2 Displaying Quantitative Data with Graphs (pp. 25-40)

1. What is a *dotplot*? When would you use it? Draw an example.

2. *[VERY IMPORTANT CONCEPT!!]* When examining a distribution, you can describe the overall pattern by its

   S_________  O_________  C________  S________

3. **Describe Shape**

   a) If a distribution is symmetric, what does it look like?

   b) If a distribution is *skewed to the right*, what does it look like?

   c) If a distribution is *skewed to the left*, what does it look like?

   d) Describe and illustrate the following distributions:

      i) Unimodal

      ii) Bimodal

      iii) Multimodal
4. Answer questions in *Check Your Understanding* on page 29.

5. How are a *stemplot* and a *histogram* similar?

6. When is it beneficial to *split the stems* on a stemplot?

7. When is it best to use a *back-to-back stemplot*?

8. Answer questions in *Check Your Understanding* on pages 32-33.
9. List the three steps involved in making a histogram.

10. Why is it advantageous to use a relative frequency histogram instead of a frequency histogram?

11. Do Technology Corner (page 36) problem and sketch your graphs.

12. Answer Check Your Understanding questions on pages 38.

1.3 Describing Quantitative Data with Numbers (pp. 48-67)

Describe Center

1. Explain how to calculate by hand \textbf{and} find on the calculator the \textit{mean}, \( \bar{x} \) (Xbar).

2. What is the meaning of \( \sum \) (sigma)?

3. Explain the difference between \( \bar{x} \) and \( \mu \) (mu).

4. Define \textit{resistant measure}.

5. Explain why the mean is not a resistant measure of center.

6. What is the \textit{median} of a distribution? Explain how to calculate by hand \textbf{and} find on the calculator.

7. Explain why the median is a resistant measure of center?
Describe Center (continued)

8. How does the shape of the distribution affect the mean and median?

9. Answer Check Your Understanding questions on page 53.

Describe Spread and Outliers

10. What is the range?

11. Is the range a resistant measure of spread? Explain.

12. How do you find first quartile $Q_1$ and third quartile $Q_3$ by hand and find on the calculator.
Describe Spread and Outliers (continued)

13. What is the Interquartile Range (IQR)?


15. How is the IQR used to identify outliers?

16. What is the five-number summary of a distribution?

17. Explain how to use the five-number summary to make a boxplot.
18. Answer Check Your Understanding questions on page 59.

19. Do Technology Corner (page 59) problem and sketch your graphs.
Describe Spread and Outliers (continued)

20. What does the standard deviation ($s$ or $s_x$) measure?

   b) How do we calculate it by hand and find on the calculator?

21. What is the relationship between variance ($s^2$, or $s^2_x$) and standard deviation ($s_x$ or $s$)? Why do we prefer to use standard deviation and NOT variance?

22. What are the 4 properties of the standard deviation explained on page 62?

23. Answer Check Your Understanding questions on page 63.

24. Do Technology Corner (page 63) problem and give the summary statistics
25. How should one go about choosing measures of center and spread?

26. Describe the four steps to organizing a statistical problem:

- State…
- Plan…
- Do…
- Conclude…