Advanced Placement Statistics: Summer Packet

Welcome to Advanced Placement Statistics. Statistics is both a fascinating mathematical field and a powerful scientific tool. This course studies the collection, organization, analysis, and interpretation of data. Although the mathematics department is offering this course, the course could just as appropriately be offered through the science or humanities departments. It is going to be quite different than any other math class you have taken here at school. In this class, the emphasis is placed on your ability to think, reason, explain, and support. Computations are often secondary. **The language component is significant**. The most important outcome of this course is that you **learn to communicate statistical findings with linguistic precision**. You will be required to analyze subtle nuances in data, wording, and statistical interpretation. Fluent use and understanding of vocabulary are fundamental skills. Word choice is vital.

We cover a great deal of material in an exceedingly limited amount of time, so please be prepared to spend a significant amount of time working on statistics outside of class. This begins with your summer assignment. Completion of this assignment will allow us to spend extra time on the more difficult topics. This introductory material is basic, though, and is in no way indicative of the academic rigor of the course. I strongly encourage you to browse through the textbook and examine the different topics we will explore.

You should give yourself **at least** two solid weeks to complete this. If you find something confusing, please email me (bstaub@whschool.org) and I will help you. I generally check my email once per week during the summer, so please plan accordingly. Also, there are many wonderful resources available to you. One is www.stattrek.com. I also have my own personal notes on Haiku. Good luck and I'll see you in September!

Materials Needed for Course

- Graphing calculator (the TI-84 is strongly recommended, but some students prefer the TI-Inspire)
- 3-ring binder devoted only to AP Stats – there are a lot of handouts.
- Scanner App for your phone such as Scanner Pro or Genius Scan
- Notebook (spiral, composition, whatever you like) devoted only to AP Stats.

Required Books and Resources

*Please note you need the **5th edition** of the textbook. There are older editions, but we will be using the 5th.*

1. **Stats: Modeling the World**, 5th edition, by Bock, Velleman, and DeVeaux (ISBN-13: 978-0134685762)

Later in the year, you will use the following books. There is no need to buy them now, but you will need them!

2. **Multiple Choice & Free Response Questions in Preparation for the AP Statistics Examination**, 4th edition, by D&S Marketing Systems (ISBN: 1-934780-16-2)
3. **Naked Statistics: Stripping Dread from the Data**, by Charles Wheelan (ISBN-13: 978-0393347777)

Method of Submission (we will be using Haiku)

- **Registering for Our Class on Haiku**
  - Go to **https://whschool.haikulearning.com/bstaub/apstatistics/signup**
  - Please use the code **WHSTA to register for our class**. There will be dropboxes associated with each part of this summer assignment. Make sure this is where you place your assignment. Don't email it to me; don't just upload it to the generic dropbox.
- **Saving Documents**
  - Each assignment gets its own file and will be submitted separately. This summer packet consists of seven assignments. In general, files should be saved as: *Last Name_First Name_Name of Assignment.* Incorrectly saved files will not be accepted.
  - So the assignments for the summer assignment should be saved as follows:
    - *Last Name_First Name_Why Statistics?*
    - *Last Name_First Name_Textbook Chapter 2*
    - *Last Name_First Name_Textbook Chapter 3*
    - *Last Name_First Name_Textbook Chapter 4*
    - *Last Name_First Name_Textbook Chapter 10*
    - *Last Name_First Name_Textbook Chapter 11*
    - *Last Name_First Name_Homeruns*

- **Formatting for Typed Documents**
  - Each page must contain your full name and course name (use the heading feature to avoid formatting issues).
  - Single-spaced in 12 point font using either Arial, Times New Roman, Calibri, or Cambria
  - 1" margins all the way around the paper.

Assignment Guidelines:

- Part 1 should be typed as per formatting instructions above
- Parts 2 and 3 should be handwritten and uploaded
  - Use a scanner app. Don't just take a picture.
  - There are many scanner apps to choose from. Students have had the most success with Scanner Pro or Genius Scan.
  - I should not see anything other than the actual page in the picture. I don't want to see your kitchen table, the frills on the side of notebook paper, or anything else.
  - It should be right side up. Don't make me rotate the picture. That is your job.
- Be careful with spelling, sentence structure, and grammar. A large part of this class is clear communication of your answers.
- **This assignment is due by 7:50am** on the first day of school
- **If it is submitted by July 31 (11:59pm), you will receive a 10% bonus on the assignment.**
- **If it is submitted by August 31 (11:59pm), you will receive a 5% bonus on the assignment.**
- This assignment will be graded on both effort and accuracy.
- There might be a test the first week of school on chapters 1-4.
- The summer assignment consists of 3 separate parts with multiple problems and questions in each part.

PART I: WHY STATISTICS?

1. Write a page explaining why high school students should take a statistics class and what you hope to gain from taking this course. Use evidence from both of the following sources:

https://www.ted.com/talks/arthur_benjamin_s_formula_for_changing_math_education

http://www.wired.com/magazine/2010/04/st_thompson_statistics/

PART II: TEXT BOOK

1. Read chapter 1
2. Read chapter 2 and complete questions: 10, 14, 20, 32, 40
3. Read chapter 3 and complete questions: 12, 18, 22, 34, 56 (no "data file"; just use a calculator)
4. Read chapter 4 and complete questions: 12, 16, 26, 32, 44
5. Read chapter 10 and complete questions: 5, 7, 11, 13, 15, 19, 25, 31, 33, 35, 39, 40
    - *Questions 19, 31, 33, 35, 39, and 40 require you to conduct a simulation. As part of your solution to these problems, make sure you describe the simulation and run 20 trials.*
6. Read Chapter 11 and complete questions: 1, 9, 15, 17, 19, 21, 25, 27, 31, 33, 40

- Please note that we will **not** cover the first four (4) chapters in class. It is important for you to learn the material in them over the summer. I will assume a full understanding of these quite elementary chapters. Email me with any questions

PART III: HOME RUNS

A statistic is a number calculated from data. Quantitative data have many different statistics that can be calculated. The data below show the number of homeruns Mark McGuire hit in each season from 1986-2001.

70	52	22	49	3	32	58	39
39	65	42	29	9	32	9	33

Determine the following statistics. Please show all work.

a. Mean
b. Median
c. Q1
d. Q3
e. Range
f. IQR (interquartile range)
g. Standard deviation ← for this one, you can simply show the formula and then the answer
h. Draw a box and whisker plot for this data.