

AP Statistics

Summer Work

Welcome to AP Statistics 2022-2023

Disclaimer: I do not recommend waiting until the last minute to complete the summer assignment! This should be completed over the course of at least three weeks.

Integrity: You can (and should!) discuss the material in this assignment with others. However, you need to write your own explanations and answers to the exercises and generate your own data when needed. To be safe, avoid looking at someone else's solution(s) or showing someone your solution(s).

The purpose of this work is to review various concepts you (should) have seen in previous classes, possibly a few years ago. Becoming acquainted with the textbook by working through the introduction and first chapter will be very valuable to have a strong start to the year!

The work is broken into three tasks, and I have included a proposed timeline to help you stay on track with the material.

Proposed Timeline for Summer Work with estimated time needed.

Task	Day	To Do:	Time (min)	Done?
1	1	Go to the store (or online) and get the materials you need for the year.	20	
2	2	Read and answer questions	45	
3	3	Read the Introduction: ○ Take notes ○ Make Flashcard	60	
	4	○ Review notes and Flashcards ○ Complete exercise questions on page 7-8. ○ Do the activity on Page 6.	30	
	5	Check exercise answers and make corrections	15	
	6	Read Section 1 ○ Take notes ○ Make Flashcards	60	
	7	○ Review notes and Flashcards ○ Complete exercise questions on page 24-30.	30	
	8	○ Check exercise answers and make corrections	15	
	9	Read Section 2 ○ Take notes ○ Make Flashcards	60	
	10	○ Review notes and Flashcards ○ Complete exercise questions on page 47-54.	30	
	11	Check exercise answers and make corrections	15	
	12	Read Section 3 ○ Take notes ○ Make Flashcards	60	
	13	○ Complete exercise on page 56	20	
	14	○ Review notes and Flashcards ○ Complete exercise questions on page 75-80.	30	
	15	○ Check exercise answers and make corrections	15	

Express Service

Don't have time to take 14 days? If you need to get this done in just 4 heavy sessions you can, but it is not recommended. It's important to give your mind time to digest the material!

<u>Heavy Day #1 (AM)</u>	Complete normal days 1, 2, 3, 6	3 hrs
<u>Heavy Day #1 (PM)</u>	Complete normal days 9, 12, 13	3 hrs
<u>Heavy Day #2 (AM)</u>	Complete normal days 4, 7, 10, 14	3 hrs
<u>Heavy Day #2 (PM)</u>	Complete normal days 5, 8, 11, 15	3 hrs

Task 1: Get Organized

You will be required to get a 1 or 2 inch 3-ring binder that will be used **ONLY** for AP Stats. You will keep all notes, handouts, flash cards, etc. in this binder.

1. Write your name on the spine (First and Last) of the binder for easy identification.
2. You will need 10 section dividers for your binder (dividers with pockets are recommended).
3. Each tab must have a labeled as follows:
 - Unit 1: Analyzing Categorical Data
 - Unit 2: Exploring Two Variable Data
 - Unit 3: Collecting Data
 - Unit 4: Probability, Random Variables, and Probability Distributions.
 - Unit 5: Sampling Distributions
 - Unit 6: Inference for Categorical Data: Proportions
 - Unit 7: Inference for Quantitative Data: Means
 - Unit 8 & 9: Inference for Distributions and Slopes
 - Projects
 - AP Exam Review

Task 2: Read “To the Student”

Take time to read through the structure of the textbook and how it will prepare you for the AP Exam. Answer the following questions to assess your understanding and save your answers to be submitted to Blackbaud during the first week of class.

1. What is the purpose of the textbook?
2. How will you learn statistics?
3. What types of problems does the book offer for you to tackle?
4. What is the basic principle to learning statistics?
5. Which book was first written specifically for the AP Statistics Exam?
6. How many years combined experience do the authors have?
7. What are the five ways the textbook will help you get ready for the AP Statistics Exam? Briefly describe each in your own words.
8. Take Notes on each of the following pages:
 - a. READ THE TEXT
 - b. LEARN STATISTICS BY DOING STATISTICS
 - c. EXAMPLES: Model statistical problems and how to solve them
 - d. EXERCISES: Practice makes perfect!
 - e. REVIEW and PRACTICE for quizzes and tests
 - f. ... and the AP STATISTICS EXAM
 - g. Use TECHNOLOGY to discover and analyze
9. What are the questions that statistics will help you answer? Briefly describe each in your own words.

Task 3: Unit 1- Chapter 1

- **Read + Reading Notes** on Chapter 1: *Data Analysis*.

Because this is an AP course (college level) you are welcome to take notes in whatever style you please. I will of course give you tips and best practices for note taking throughout the year, but you should do whatever works for you. You may handwrite or type your notes.

Note: take your time when making your reading notes; these are the real backbone of this course. The more attention and detail you put into your notes, the more prepared you will be for class discussions, tests/quizzes, and ultimately the AP exam in May.

Note: There will be a 10 Question Reading Quiz during the first week of class. You will be allowed to use YOUR Chapter Notes on the Reading Quiz.

- **Flash Cards**

You need to create flashcards for the following key terms found in Chapter 1. There is an advantage to making physical flashcards, so this is my expectation.

Note: I would recommend having a dedicated space to store your flash cards. You may use rings, zip lock bags, flash card containers/boxes, or if your dividers have pockets, you may use those [I'd recommend a zip lock baggy to make sure the stay in place].

<u>Introduction</u>	<u>Section 1</u>	<u>Section 2</u>	<u>Section 3</u>
○ Statistics	○ Frequency Table	○ Dot plot	○ Mean
○ Individual	○ Relative	○ Symmetric	○ Statistic
○ Variable	Frequency Table	○ Skewed to the	○ Parameter
○ Categorical	○ Bar Graph	Right	○ Resistant
Variable	○ Pie Chart	○ Skewed to the	○ Median
○ Quantitative	○ Two-Way Table	Left	○ Range
Variable	○ Marginal	○ Stemplot	○ Standard
○ Discrete Variable	Relative	○ Histogram	○ Deviation
○ Continuous	Frequency		○ Variance
Variable	○ Joint Relative		○ Quartiles
○ Distribution	Frequency		○ First Quartile, Q_1
	○ Conditional		○ Third Quartile, Q_3
	Relative		○ Interquartile
	○ Frequency		○ Range, IQR
	○ Side-by-side Bar		○ Five-Number
	Graph		○ Summary
	○ Segmented Bar		○ Boxplot
	Graph		
	○ Mosaic Plot		
	○ Association		

- **Exercise Questions:**

Complete the following exercises on binder paper. These must be handwritten and in your own words using complete sentences. Check and Correct your work using the solutions at the end of the PDF. Corrections are part of the grade.

Note: I often provide answers to homework problems with the expectation that you do this honestly, then correct your work using the solutions in the back of the book. Corrections are a necessary part of the learning process and will help towards understanding statistics more thoroughly.

- **Intro Exercises:** page 7-8 #'s 1, 5, 9, 10
- **Section 1.1:** page 24-30 #'s 11, 15, 23, 29, 33, 40-43
- **Section 1.2:** page 47-54 #'s 47, 55, 63, 67, 75, 80-85
- **Section 1.3:** page 75-80 #'s 87, 93, 101, 105, 109, 117, 123-126

- **Statistical Activities:**

Throughout the year we will be simulating experiments to gain a deep understanding of Statistics. There are a few activities in the text you will do this summer and you're welcome to get your family involved in the discussion.

- **Hiring Discrimination** (Page 6)

Simulate this on your own to get 40 simulated lottery results. Display the results on a dotplot and use it to discuss if its plausible that airline managers conducted a fair lottery. Write a summary of your discussion along with the dotplot.

- **Mean as a "Balance Point"** (Page 56)

Parts 1, 2 and 3 of this activity are meant to just be a guide. Use them the play with this concept of "Balance Point" and what it says about the mean. To test yourself afterward, put the 5 pennies anywhere you like on the ruler, and calculate where you *think* the pencil should go. Include your work and describe the result.