

## ***AP Statistics Summer Packet 2020-2021 School Year***

### **Upper Moreland High School**

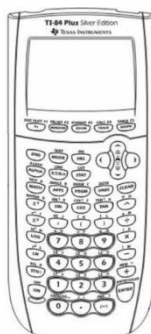
***\*You are not required to print this packet\****

***\*You may answer all questions on a separate sheet of paper and bring the first day of school OR type your responses via google doc then share with your AP Statistics teacher.***

**This summer packet is for students entering AP Statistics and is intended to introduce the vocabulary and purpose of introductory statistics. Most students find that statistics is very distinct from their previous high school math courses, and thus this packet is also meant to help you become more familiar with this unique and interesting discipline. Please complete the packet by the 1<sup>st</sup> day of school.**

**Which calculator do I need?**

**The TI graphing calculator is essential for AP Statistics.**



**Lastly, if you are really interested in Statistics and have some extra time, I recommend *Outliers* by Malcolm Gladwell and *Freakonomics* by Steven Levitt and Stephen Dubner.**

## Part I

### **Watch the videos:**

What is Statistics? <https://www.learner.org/series/against-all-odds-inside-statistics/what-is-statistics/>

How Statistics can be Misleading <https://www.youtube.com/watch?v=sxYrzy3cq8>

### **Then, answer the questions below:**

- 1) Before you watched the videos, how would you have defined Statistics?  
Has your definition changed after watching the videos?
- 2) What is the difference between inferential statistics and descriptive statistics?
- 3) List some examples from the videos of how statistics is present in our every-day lives.
- 4) Why should you not trust a statistic by itself?
- 5) Explain Simpson's paradox in your own words. Find another example not shown in the videos of this paradox arising.

## Part II:

- 1) Read the article below then summarize the main ideas.  
<https://towardsdatascience.com/misleading-with-data-statistics-c6d506bdb9cf>
- 2) Find a newspaper or magazine article involving statistics. Include the digital link or bring your article to class on the first day. Write a summary of your article.
- 3) *In mathematics, we aren't typically concerned with the ethics of research because no harm comes to the participants. Ethical data collection, however, must always remain the number one priority of any statistician. Find and describe two historical examples of statistical research that was tainted by ethics violations.*

## Part III: Highlights from the AP Statistics Course Description

The AP Statistics course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes evident in the content, skills, and assessment in the AP Statistics course: exploring data, sampling and experimentation, probability and simulation, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding.

### College Course Equivalent

The AP Statistics course is equivalent to a one-semester, introductory, non-calculus-based college course in statistics.

### Prerequisites

The AP Statistics course is an excellent option for any secondary school student who has successfully completed a second-year course in algebra and who possesses sufficient mathematical maturity and quantitative reasoning ability. Because second-year algebra is the prerequisite course, AP Statistics is usually taken in either the junior or senior year. Decisions about whether to take AP Statistics and when to take it depend on a student's plans:

- Students planning to take a science course in their senior year will benefit greatly from taking AP Statistics in their junior year.
- For students who would otherwise take no mathematics in their senior year, AP Statistics allows them to continue to develop their quantitative skills.
- Students who wish to leave open the option of taking calculus in college should include precalculus in their high school program and perhaps take AP Statistics concurrently with precalculus.
- Students with the appropriate mathematical background are encouraged to take both AP Statistics and AP Calculus in high school.

*The AP Statistics Exam assesses student understanding of the skills and learning objectives outlined in the course framework. The exam is 3 hours long and includes 40 multiple-choice questions and 6 free-response questions. The details of the exam, including exam weighting and timing, can be found below:*

| Section   | Question Type                          | Number of Questions | Exam Weighting | Timing            |
|-----------|--|---------------------|----------------|-------------------|
| <b>I</b>  | <b>Multiple-choice questions</b>       | <b>40</b>           | <b>50%</b>     | <b>90 minutes</b> |
| <b>II</b> | <b>Free-response questions</b>         | <b>6</b>            |                |                   |
|           | Part A: Questions 1–5                  |                     | <b>37.5%</b>   | <b>65 minutes</b> |
|           | Part B: Question 6: Investigative task |                     | <b>12.5%</b>   | <b>25 minutes</b> |

**The exams assess content from the three big ideas of the course.**

**Big Idea 1:** Variation and Distribution

**Big Idea 2:** Patterns and Uncertainty

**Big Idea 3:** Data-Based Predictions, Decisions, and Conclusions

**Exam Weighting for the Multiple-Choice Section of the AP Exam**

| <b>Units</b>  | <b>Exam Weighting</b> |
|---|-----------------------|
| <b>Unit 1:</b> Exploring One-Variable Data                                  | <b>15–23%</b>         |
| <b>Unit 2:</b> Exploring Two-Variable Data                                  | <b>5–7%</b>           |
| <b>Unit 3:</b> Collecting Data  | <b>12–15%</b>         |
| <b>Unit 4:</b> Probability, Random Variables, and Probability Distributions | <b>10–20%</b>         |
| <b>Unit 5:</b> Sampling Distributions                                       | <b>7–12%</b>          |
| <b>Unit 6:</b> Inference for Categorical Data: Proportions                  | <b>12–15%</b>         |
| <b>Unit 7:</b> Inference for Quantitative Data: Means                       | <b>10–18%</b>         |
| <b>Unit 8:</b> Inference for Categorical Data: Chi-Square                   | <b>2–5%</b>           |
| <b>Unit 9:</b> Inference for Quantitative Data: Slopes                      | <b>2–5%</b>           |

- At Upper Moreland High School, if you take an AP course you are strongly encouraged to take the AP exam.
- The AP Statistics Exam will occur at noon on Thursday May 13<sup>th</sup>, 2021.

**HAVE A GREAT SUMMER AND I LOOK FORWARD TO SEEING YOU IN SEPTEMBER!**