

Advance Placement (AP) Statistics Summer Project

Welcome to AP Statistics. This class prepares all students for the AP Statistics exam in early May. In order to be successful for the exam, we will spend our time focusing on mastering new content and we do not have the luxury of spending the first quarter reviewing material from previous mathematics classes. Therefore, all students must complete a summer review assignment that contains material that will be on the AP exam. The summer assignment consists of learning the material from the first chapter of our AP Statistics textbook. The assignments are due during Statistics class on the first day of school and will be counted as a completion grade. (*Please email me for answers.*) Additionally, we will have a test over the assignment during the first week. This assignment cannot be completed in a night or two, nor is the due date flexible. Please plan accordingly.

If you have questions, please visit my website: <http://rivero.weebly.com> and send me an email through the contact form there. I will also be holding a summer institute for math review. Please check the school website for dates, and attend, if possible.

Thanks,

Mrs. Rivero

AP Statistics Summer Assignment

1) Read and take notes on the section 1: Introduction

a) Objectives for section 1: Introduction

- i. Identify the individuals and variables in a set of data
- ii. Classify variables as categorical or quantitative. Identify units of measurement for a quantitative variable.

b) definition of vocabulary words

- i. individuals, variable, categorical variable, quantitative variable, distribution, & inference

c) Notes about Individuals and Variables

d) Complete the Check Your Understanding on page 5 (Answers are at the end of this document)

e) Notes about Data Analysis to Inference

2) Complete Exercises #1-8 on pp 7-8. Please do your exercises on separate paper than your notes.

3) Read and take notes on the section 1.1: Analyzing Categorical Data

a) Objectives for section 1.1: Analyzing Categorical Data

- i. Make a bar graph of the distribution of a categorical variable, or, in general, to compare related quantities
- ii. Recognize when a pie chart can and cannot be used.
- iii. Identify what makes some graphs deceptive
- iv. From two-way tables of counts, answer questions involving marginal and conditional distributions

v. Describe the relationship between two categorical variables by computing appropriate conditional distributions.

vi. Construct bar graphs to display the relationship between two categorical variables.

vii. Describe and recognize Simpson's paradox.

b) definition of vocabulary words

i. Frequency table, relative frequency table, roundoff error, pie chart, bar graph, marginal distribution, conditional distribution, segmented bar graph, side-by-side bar graph, association, Simpson's paradox

c) Notes about Bar Graphs and Pie Charts

d) Notes about Graphs: Good and Bad

e) Notes about Two-Way Tables and Marginal Distributions

d) Complete the Check Your Understanding on page 14 (Answers are at the end of this document)

e) Notes about Relationships between Categorical Variables: Conditional Distributions

f) Complete the Check Your Understanding on page 17 (Answers are at the end of this document)

g) Notes about Organizing a Statistics Problem

i. State-Plan-Do-Conclude

4) Complete Exercises #9-36 on pp 22-26. Please do your exercises on separate paper than your notes.

5) Read and take notes on the section 1.2: Displaying Quantitative Data with Graphs

a) Objectives for section 1.2: Displaying Quantitative Data with Graphs

i. Make a dotplot or stemplot to display small sets of data

ii. Describe the overall pattern (shape, center, spread) of a distribution and identify any major departures from the pattern (like outliers)

iii. Make a histogram with a reasonable choice of classes

iv. Identify the shape of a distribution from a dotplot, stemplot, or histogram as roughly symmetric or skewed. Identify the number of modes.

v. Interpret histograms

b) definition of vocabulary words

i. dotplot, shape, center, spread, mean, median, mode, range, outlier, symmetric, skewed left, skewed right, unimodal, bimodal, multimodal, stemplot, splitting stems, back-to-back stemplot, histogram, classes, bin

c) Notes about Dotplots

d) Notes about How to Examine the Distribution of a Quantitative Variable

- e) Notes about Describing Shape
 - d) Complete the Check Your Understanding on page 31 (Answers are at the end of this document)
 - e) Notes about Comparing Distributions
 - f) Notes about Stemplots
 - g) Complete the Check Your Understanding on pp 34-35 (Answers are at the end of this document)
 - h) Notes about Histograms
 - i. Reference Appendix B on p A6 for instructions to create a histogram on the TI nspire
 - i) Complete the Check Your Understanding on p 39(Answers are at the end of this document)
 - h) Notes about Using Histograms Wisely
 - i) Complete the Check Your Understanding on p 41(Answers are at the end of this document)
- 6) Complete Exercises #37-78 on pp 42-50. Please do your exercises on separate paper than your notes.
- 7) Read and take notes on the section 1.3: Describing Quantitative Data with Numbers
- a) Objectives for section 1.3: Describing Quantitative Data with Numbers
 - i. Calculate and interpret measures of center (mean, median)
 - ii. Calculate and interpret measures of spread (IQR, standard deviation)
 - iii. Identify outliers using the 1.5 X IQR rule
 - iv. Make a boxplot
 - v. Select appropriate measures of center and spread
 - vi. Use appropriate graphs & numerical summaries to compare distributions of quantitative variables.
 - b) definition of vocabulary words
 - i. mean, sigma notation, sample mean, population mean, resistant measure, median, quartiles, first quartile, third quartile, five-number summary, Interquartile range (IQR), outliers, boxplot, variance, standard deviation,
- c) Notes about Measuring Center: The Mean
 - d) Notes about Measuring Center: The Median
 - e) Notes about Comparing the Mean and the Median
 - d) Complete the Check Your Understanding on page 55 (Answers are at the end of this document)
 - e) Notes about Measuring Spread: The Interquartile Range (IQR)
 - f) Notes about Measuring Outliers

g) Notes about The Five-Number Summary and Boxplots

i. Reference Appendix B on pp A6-A7 for instructions to create a boxplot on the TI-nspire

i) Complete the Check Your Understanding on p 61(Answers are at the end of this document)

j) Notes about Measuring Spread: The Standard Deviation

k) Complete the Check Your Understanding on p 64(Answers are at the end of this document)

l) Notes about Computing Numerical Summaries with technology (reference Appendix B on pA7 for information how to compute the numerical summaries).

m) Notes about Choosing Measures of Center and Spread

8). Complete Exercises #79-113 on pp 70-74. Please do your exercises on separate paper than your notes.

While it is fine to work with other members of your class, your answers (especially on exercises that deal with writing in sentences) should not match a classmate's paper word-for-word. Obviously, simple calculations might appear exactly as on a classmate's paper. In the event that your answers are obviously copied straight from a classmate's paper, this is considered plagiarism and will result in a zero for all parties involved.