

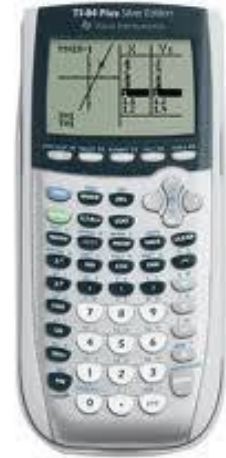


Eastlake High

School AP

Statistics

Summer Packet



Displaying and Describing Data

Note: Due to the EHS bell schedule and when we start our school year, we lose quite a bit of time relative to most schools. Therefore, I'm asking you to work on Chapter 1 over the summer. There will be a test on this information on the first Friday of the year. Make sure you understand this material and if not, ask questions!

If you have questions as you're working through this, you may contact Mr. Emerson at gemerson@lwsd.org. Because it is also summer for me, it may take a few days for me to respond.

What is AP STATISTICS?

Course Description

AP Statistics is a college level course in statistics. Credit or placement at most universities can be earned through a score of 3 or higher on the Advanced Placement Statistics Exam offered in May. Course topics include: graphical and numerical summaries of data sets, techniques for establishing confidence intervals and testing hypothesized parameter values. In addition, students learn to perform surveys and conduct and analyze experiments involving one or two variables. ***Students will need a Graphing Calculator which includes a statistics packet which coordinates with the existing curriculum (TI 83+ or TI 84+).***

Outline: The four major topics as outlined by the College Board are carefully followed:

1. Exploring Data: Observing patterns and departures from patterns
2. Planning a Study: Deciding what and how to measure
3. Anticipating Patterns: Producing models using probability and simulation
4. Statistical Inference: Confirming models

This course requires students to analyze data, make connections and draw conclusions using statistics. Students in the class are organized into small groups to facilitate exploration, discovery and discussion. Students will learn to use technology to explore data and create multiple representations from which they can draw conclusions.

Specific technology used in this class includes: TI-83 or TI-84 graphing calculators, Excel spreadsheet software, and Fathom Statistical software. Students will communicate their understanding of statistics in writing through projects, quizzes, exams and papers.

Instructions

- 1) **TODAY:** Save this document to a place where you will be able to access it after your lwsd password resets. No, really! Do this NOW! Before you forget!
- 2) **TODAY:** Please check that all the links work from whatever computer you plan on working from. They should, but let's not take any chances!
- 3) Early August: Begin working your way through the questions. You may already know how to do a lot of this, which is great! I have provided you with a number of resources to help you with what you don't know. For anything you cannot do on your own, use the references provided.
- 4) Make sure you know how to do everything I outlined in the Calculator Help section. You will use these skills all year, so make sure you *really learn* how to do them.
- 5) Learn the vocabulary. Again, *learn it!* Many of the terms and concepts in Chapter 1 are foundational. Know them now, so that when they come up again, you don't need to struggle to recall what they mean! In general, fluency with old concepts, vocabulary and symbols is probably more important in AP Stats than in any math class you've taken so far. Take it seriously.

Learning Targets for Chapter 1

1. I can identify the individuals and the variables in a set of data.
2. I can classify a variable as categorical or quantitative.
3. I can make a bar graph or a pie chart to represent the distribution of a categorical variable.
4. I can identify what makes some graphs deceptive.
5. I can calculate the marginal and conditional distributions from a two-way table.
6. I can describe the relationship between two categorical variables.
7. I can create side-by-side and segmented bar graphs to display the relationship between two categorical variables.
8. I can create a dotplot or a stemplot to display a small set of quantitative data. I can create a histogram or boxplot by hand or using my calculator.
9. I can describe the distribution of a set of quantitative variables using SOCS.
10. I can calculate measures of center (mean, median) and spread (standard deviation, IQR) by hand or using my graphing calculator.
11. I can interpret measures of center and spread in the context of a real-world situation.
12. I can use the $1.5 \times \text{IQR}$ rule to identify outliers.
13. I know when to use the mean vs. the median and the standard deviation vs. the IQR.
14. I can use appropriate graphs and numerical summaries to compare distributions of quantitative data.
15. I can identify major trends in time plots and understand that they are NOT univariate (so I should never use SOCS to describe them!).

[Please fill out this survey to let me know how you did with the learning targets!](#)

Videos – Watch and take notes!

[Types of variables](#)

[Pie charts and bargraphs](#)

[Misleading graphs](#)

[Marginal and Conditional Distributions](#)

[More Marginal and conditional](#)

[Segmented Bar Graphs](#)

[Dotplots](#)

[Making a stem and leaf plot \(plus how to sort your data\)](#) *Sorting data on your calculator is incredibly useful!

[Shape, center and spread](#)

[Histograms](#) (in general)

[Finding outliers](#)

[Understanding standard deviation](#) (kinda long, but this guy is pretty entertaining...)

[Example of standard deviation by hand](#)

[Timeplots](#)

Calculator Help –KNOW THIS! It's INCREDIBLY IMPORTANT and you'll use these skills all year!!

[Entering and displaying data on your calculator](#)

[Histograms on TI-84 calculator](#)

[1-Variable Statistics](#)

[1-Variable Statistics from a Frequency Table](#)

[Creating a Histogram from a Frequency Table](#)

[Box and whiskers plots](#) (you can use Zoom 9 to get a good window instead of changing it by hand!)

Vocabulary

AP Statistics is a **VERY** vocab-intensive class! If you do not pay careful attention to the definitions and understand the meanings of the key terms, you will not be successful! Often, the terms in question are similar, so paying attention to detail will be critical. Please define the following key terms from Chapter 1:

Individuals/Experimental units:

Variable:

Categorical variable:

Quantitative variable:

Distribution of a variable:

Left-skewed/Right-skewed:

Unimodal:

Bimodal:

Vocab, continued

Standard Deviation (write the formula and explain its meaning—very important!):

Variance (this won't feel important now, but it is!):

Frequency:

Relative Frequency:

Cumulative Relative Frequency Distribution:

Two-way Table:

Marginal Distribution:

Conditional Distribution:

Association:

Time Plot (*this is NOT in the textbook, but does show up on the exam often enough that I want you to know it):

Notes from Chapter 1

Write down anything you think is important to remember from this chapter. You should also write down any questions you have here.

Problems to Try

The problems for each section are at the end of the “Text” links.

Introduction:

1, 3, 7, 8

[PowerPoint](#)

[Text](#)

1.1:

13 – 25 (odd), 27 – 32

[PowerPoint](#)

[Text](#)

1.2:

37 – 41 (odd), 47, 53, 57, 59, 69 – 74

[PowerPoint](#)

[Text](#)

1.3:

79 – 83 (odd), 87 – 97 (odd), 105

[PowerPoint](#)

[Text](#)

[Please take this survey so that I can get to know you](#)