



**CEDAR GROVE HIGH SCHOOL  
MATHEMATICS DEPARTMENT**



# ***SUMMER ASSIGNMENT***

## **AP STATISTICS**

***Completion of this packet is required by the first day of class.***

Date Received by Main Office: \_\_\_\_\_

\_\_\_\_\_  
Student Name (Print):

\_\_\_\_\_  
Student Signature:

\_\_\_\_\_  
Parent Name (Print):

\_\_\_\_\_  
Parent Signature:

\*For each day late, 5% of the total point value will be deducted.

This assignment is for STUDENTS ENTERING AP Statistics.

# AP Statistics Summer Assignment

First, welcome to Advanced Placement Statistics. This course is like no other mathematics course in that the emphasis is placed on your ability to **think, reason, explain, and support** as opposed to performing rudimentary computations.

Second, you should be competent in basic algebra and will need to familiarize yourself with the following topics:

- **Descriptive Statistics:** Mean, median, mode, variance, standard deviation, range, 1<sup>st</sup> quartile, 3<sup>rd</sup> quartile, minimum, and maximum
- **Statistical Displays:** Box-and-whisker plot, bar graph, histogram, circle (pie) graph, and stem-and-leaf plot

(Note: You may or may not have seen some of these before)

Third, you will need to have your own calculator and will need to bring it to class **every day**. Though there are several on the market, it is “highly recommended” you have a Texas Instruments graphing calculator (specifically the TI-84 Plus Silver Edition) as this is the calculator I will be using in teaching the material.

Lastly, you will need to be an active participant in this course. This means you **MUST** be willing to work with me and your fellow classmates often during the year and be willing to have a good time. If you are the type of student that does not want to work, would rather sit and do nothing during class time, or does not enjoy the mental challenge of a good question, this is probably not the course for you.

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If you've read this far and are still interested in the course (i.e., I haven't scared you off yet), then I bid you welcome. Attached is your summer assignment (make sure to read the directions **thoroughly**). I look forward to working with and teaching each and every one of you over the course of the next year.

**Enjoy your summer!**

## Part one: Reading and Vocabulary

Define each of the following terms. I encourage you to rephrase the definition in your terms in order to challenge your learning. When asked to provide a unique example or sketch of the word, do not provide one that is given online or in the textbook.

1. Categorical variables

a. Example:

2. Quantitative variables

a. Example:

3. Discrete variables vs. Continuous variables

4. Univariate data vs. Bivariate data

5. Population

a. Example

6. Sample

a. Example

7. Median

8. Mean

a. Formula

9. Outlier

a. Formula\*

10. Parameter

11. Statistic

12. Range

13. Center

14. Spread

15. Variance

- a. What does it represent?
  
  
  
  
  
  
  
  
  
  
- b. How do you find this value on a calculator? (More valuable than formula)

16. Standard Deviation

- a. How do you find this value on a calculator? (More valuable than formula)

17. Symmetric Distribution (Symmetry)

- a. Draw a sketch example

18. Unimodal vs. Bimodal

19. Skewed Distributions

- a. Draw a skewed left sketch
  
  
  
  
  
  
  
  
  
  
- b. Draw a skewed right sketch

20. Bar chart

21. Histogram

22. What is the main difference between a bar graph and histogram?

23. Stem plots

24. Boxplots

25. Quartiles

26. Interquartile range – What does it represent from the data? How is it calculated?

27. Four ways to describe data sets (Explain what the acronym SOCS stands for)

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### Part two: Practice Problems

1. Categorical or Quantitative: Determine if the variables listed below are quantitative or categorical (qualitative).

- a. Time it takes to get to school
- b. Number of people under 18 living in a household
- c. Hair color
- d. Temperature of a cup of coffee
- e. Teacher salaries
- f. Gender
- g. Smoking
- h. Height
- i. Amount of oil spilled
- j. Age of Oscar winners
- k. Type of depression medication
- l. Jellybean flavors
- m. Country of origin
- n. Type of meat
- o. Number of shoes owned

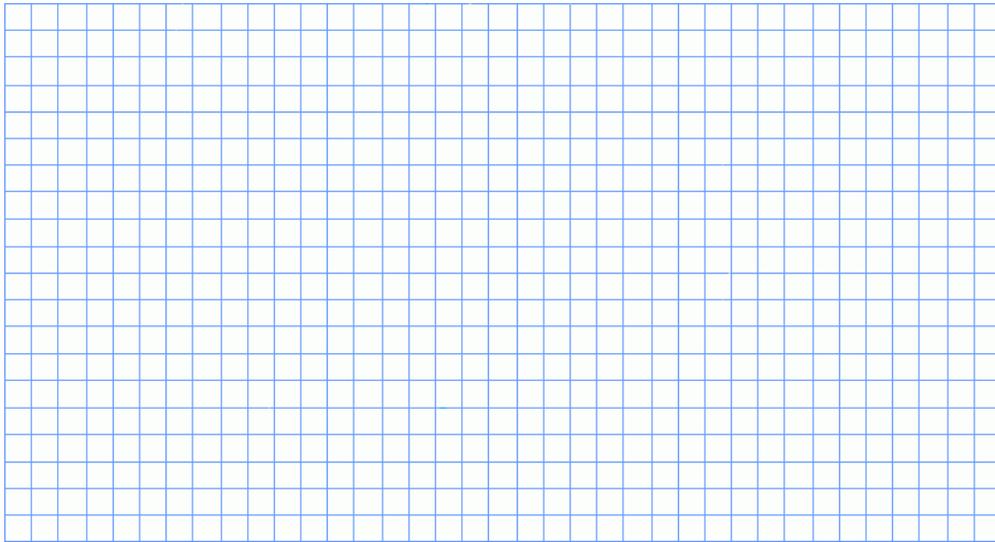
2. Accidental Deaths

a. In 1997, there were 92,353 deaths from accidents in the United States. There were 42,340 deaths from motor vehicle accidents, 11,858 from falls, 10,163 from poisoning, 4051 from drowning, and 3601 from fires. The rest were listed as “other” causes.

i. Find the percent of accidental deaths from each of these causes, rounded to the nearest percent.

ii. What percent of accidental deaths were from “others causes”?

iii. Neatly create a **well-labeled** bar graph of the distribution of causes of accidental deaths. Be sure to indicate an “other causes” bar.



iv. A pie chart is another graphical display used to show all categories in a categorical variable relative to each other. Create a pie chart for the accidental death percentages. You may try using a software or internet source to make one and paste in the space below.

3. Shopping Spree: A marketing consult observed 50 consecutive shoppers at a supermarket. One variable of interest was how much each shopper spent in the store. Here is the data (rounded to the nearest dollar), arranged in increasing order.

3	9	9	11	13	14	15	16	17	17
18	18	19	20	20	20	21	22	23	24
25	25	26	26	28	28	28	28	32	35
36	39	39	41	43	44	45	45	47	49
50	53	55	59	61	70	83	86	86	93

Make a stem plot using tens of dollars as the stem and dollars as the leaves. **Make sure you include appropriate labels.**

4. Where do older folks live?

a. This table gives the percentage of residents ages 65 or older in each of the 50 states.

State	Percent	State	Percent	State	Percent
Alabama	13.1	Louisiana	11.5	Ohio	13.4
Alaska	5.5	Maine	14.1	Oklahoma	13.4
Arizona	13.2	Maryland	11.5	Oregon	13.2
Arkansas	14.3	Massachusetts	14.0	Pennsylvania	15.9
California	11.1	Michigan	12.5	Rhode Island	15.6
Colorado	10.1	Minnesota	12.3	South Carolina	12.2
Connecticut	14.3	Mississippi	12.2	South Dakota	14.3
Delaware	13.0	Missouri	13.7	Tennessee	12.5
Florida	18.3	Montana	13.3	Texas	10.1
Georgia	9.9	Nebraska	13.8	Utah	8.8
Hawaii	13.3	Nevada	11.5	Vermont	12.3
Idaho	11.3	New Hampshire	12.0	Virginia	11.3
Illinois	12.4	New Jersey	13.6	Washington	11.5
Indiana	12.5	New Mexico	11.4	West Virginia	15.2
Iowa	15.1	New York	13.3	Wisconsin	13.2
Kansas	13.5	North Carolina	12.5	Wyoming	11.5
Kentucky	12.5	North Dakota	14.4		

b. Histograms are a way to display groups of quantitative data into bins or groups (the bars). **These bins have the same width and scale and are touching because the number line is continuous.** To make a histogram you must first decide on an appropriate bin width and count how many observations are in each bin. This bins for percentage of residents aged 54 or older have been started below for you.

c. Finish the chart of bin widths and then create a histogram using those bins on the grid below. Be sure to include appropriate labels.

Bin Width	Frequency
4 to <6	1
6 to <8	
8 to <10	



Part Three: Textbook Problems (Show all work on separate sheet of paper attached)  
Reference all TECHNOLOGY CORNERS...

**Chapter 1**

Day	Topics	Learning Objectives Students will be able to ...	Assignment
1	Chapter 1 Introduction	<ul style="list-style-type: none"> <li>Identify the individuals and variables in a set of data.</li> <li>Classify variables as categorical or quantitative.</li> </ul>	2, 4, 7, 8
2	1.1 Bar Graphs and Pie Charts, Graphs: Good and Bad	<ul style="list-style-type: none"> <li>Display categorical data with a bar graph. Decide if it would be appropriate to make a pie chart.</li> <li>Identify what makes some graphs of categorical data deceptive.</li> </ul>	10, 16, 17
3	1.1 Two-Way Tables and Marginal Distributions, Relationships between Categorical Variables: Conditional Distributions	<ul style="list-style-type: none"> <li>Calculate and display the marginal distribution of a categorical variable from a two-way table.</li> <li>Calculate and display the conditional distribution of a categorical variable for a particular value of the other categorical variable in a two-way table.</li> <li>Describe the association between two categorical variables by comparing appropriate conditional distributions.</li> </ul>	20, 26–32
4	1.2 Dot plots, Describing Shape, Comparing Distributions, Stem plots	<ul style="list-style-type: none"> <li>Make and interpret dot plots and stem plots of quantitative data.</li> <li>Describe the overall pattern (shape, center, and spread) of a distribution and identify any major departures from the pattern (outliers).</li> <li>Identify the shape of a distribution from a graph as roughly symmetric or skewed.</li> <li>Compare distributions of quantitative data using dot plots or stem plots.</li> </ul>	38, 40, 44, 46
5	1.2 Histograms, Using Histograms Wisely	<ul style="list-style-type: none"> <li>Make and interpret histograms of quantitative data.</li> <li>Compare distributions of quantitative data using histograms.</li> </ul>	60, 64, 74
6	1.3 Measuring Center: Mean and Median, Comparing the Mean and Median, Measuring Spread: Range and <i>IQR</i> , Identifying Outliers, Five-Number Summary and Boxplots	<ul style="list-style-type: none"> <li>Calculate measures of center (mean, median).</li> <li>Calculate and interpret measures of spread (range, <i>IQR</i>).</li> <li>Choose the most appropriate measure of center and spread in a given setting.</li> <li>Identify outliers using the <math>1.5 \times IQR</math> rule.</li> <li>Make and interpret boxplots of quantitative data.</li> </ul>	80, 82, 84, 92, 94
7	1.3 Measuring Spread: Standard Deviation, Choosing Measures of Center and Spread, Organizing a Statistics Problem	<ul style="list-style-type: none"> <li>Calculate and interpret measures of spread (standard deviation).</li> <li>Choose the most appropriate measure of center and spread in a given setting.</li> <li>Use appropriate graphs and numerical summaries to compare distributions of quantitative variables.</li> </ul>	96, 99, 102, 108-110