

AP Statistics
Summer Assignment

- Show **ALL** work.
- This assignment is worth 10% of your 1st quarter grade.
- Assignment is due **Friday, August 18st** by 2:00 PM in the labeled box located in the main office.
- Any assignments that are late will be penalized 20 points each day beginning with **Monday, August 21th**.
- If you decide that you would rather not participate in this course you must contact guidance by **July 12th**.

Assignments:

1. Complete Chapter One Notes Packet containing notes on sections **1.1, 1.2, 1.3,** and **1.4.**
2. Assignment 1: p. 8(**3, 4, 5, 6, 8, 10**)
3. Assignment 2: p. 16(**13, 14, 16, 17, 19, 21, 22, 24**)
 - a. Use graph paper and a ruler to construct bar graphs and dotplots.
4. Assignment 3: p. 25 (**35, 36**)
 - a. Use graph paper and a ruler to construct bar graphs and dotplots.
5. Complete Chapter Two Notes Packet containing notes on sections **2.1, 2.2, 2.3,** **2.4,** and **2.5.**
6. Assignment 4: p. 33(**1, 3, 5, 8, 10**)
7. Assignment 5: p. 43(**15, 18, 19, 23, 25, 28, 29, 32**)
8. Assignment 6: p. 58(**33, 35, 39, 41, 42**)
9. Assignment 7: p. 64(**53 – 57, 59**)

If you have any questions please email me at awestrom@tivertonschools.org

Statistics
Name:

Westrom
Date:

Chapter 1 Notes

The Role of Statistics and the Data Analysis Process

Section 1.1: Why Study Statistics?

Explore the given examples for each reason to study statistics, and then write an example of your own.

- Reason One: **Being Informed**
- Reason Two: **Making Informed Judgments**
- Reason Three: **Evaluating Decisions That Affect Your Life**

Section 1.2: The Nature and Role of Variability

Read the first line of the section. The science of statistics focuses on three things:

- 1.
- 2.
- 3.

What is it about variability that makes the study of statistics so important?

Name:

Date:

Section 1.3: Statistics and the Data Analysis Process

Vocabulary Word:	Definition
<i>Population:</i>	
<i>Sample:</i>	
<i>Descriptive Statistics:</i>	
<i>Inferential Statistics:</i>	

What is the relationship between a population and a sample?

What are the two branches of statistics?

The data Analysis Process

The steps in planning and conducting a statistical study are illustrated in Example 1.3. Briefly describe how each is carried out in the example:

1. Understanding the nature of the problem.
2. Deciding what to measure and how to measure it.
3. Data collection.
4. Data summarization and preliminary analysis.

Name: _____

Date: _____

5. Formal data analysis.

6. Interpretation of results.

Homework: 3, 4, 5, 6, 8, 10

Complete on a separate sheet of paper

Section 1.4: Types of Data and Some Simple Graphical Displays

Vocabulary Word:	Definition
<i>Variable:</i>	
<i>Data:</i>	
<i>Categorical Data:</i>	
<i>Numerical Data:</i>	
<i>Univariate Data:</i>	
<i>Bivariate or Multivariate Data:</i>	

Provide another name for the following types of data:

1. Categorical

2. Numerical

Name: _____

Date: _____

Given an example of each of the following types of data sets:

1. Univariate categorical:

2. Univariate numerical:

3. Bivariate or multivariate categorical:

4. Bivariate or multivariate numerical:

Two Types of Numerical Data:

Explain how to recognize numerical data that is continuous and give an example:

Explain how to recognize numerical data that is discrete and give an example:

Vocabulary Word:	Definition
<i>Continuous:</i>	
<i>Discrete:</i>	
<i>Frequency Distribution for Categorical Data:</i>	
<i>Frequency:</i>	

Statistics

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Name:

Date:

<i>Relative Frequency:</i>	
<i>Bar Graph:</i>	
<i>Dot Plot:</i>	

When is it appropriate to use a bar graph?

When is it appropriate to use a dotplot?

Homework: 13, 14, 16, 17, 19, 21, 22, 24

Complete on a separate sheet of paper, Graph paper will be helpful for the bar graphs and dot plots, use rulers.

Name:

Date:

Chapter 2 Notes

Collecting Data Sensibly

Vocabulary

Bias
Block
Census
Cluster Sampling
Clusters
Confounding Variable
Control Group
Convenience Sampling
Direct Control
Double-Blind Experiment
Experiment
Experimental Condition
Experimental Unit
Explanatory Variables
Extraneous Variable
Factors
Measurement or Response Bias
Observational Study
Overcoverage
Placebo
Random Assignment
Replication
Response Variable
Sampling Frame
Sampling with Replacement
Sampling without Replacement
Selection Bias
Simple Random Sample
Single-Blind Experiment
Strata
Stratified Random Sampling
Systematic Sampling
Treatments
Undercoverage
Voluntary Response Sampling

Write all definitions in your notebook.

Name: _____

Date: _____

Section 2.1: Statistical Studies: Observation and Experimentation

In what ways are observational studies and experiments similar?

What are some important differences between observational studies and experiments?

Describe the confounding variable from each of the three examples found on page 31.

1.

2.

3.

Drawing Conclusions from Statistical Studies

Under what conditions is it possible to show a cause-and-effect relationship?

Homework: p. 33 (1, 3, 5, 8, 10)

Section 2.2: Sampling

Give an example of a poor sample.

Bias in Sampling

Provide a brief example of each type of bias:

Name:

Date:

1. Selection bias:

2. Measurement and response bias:

3. Nonresponse bias:

Random Sampling

Which of the following is a simple random sampling method? Are both? Neither?

- A. One in which each individual has the same chance of being selected
 - B. One in which each sample of a certain size is equally likely to be selected
- Explain your choice:

The most common sampling frame is a list. Give two other example of sampling frames:

- 1.

- 2.

Why is the sample selection process so important?

Respond to the claim that a relatively small sample can accurately reflect the population:

Other Sampling Methods

Briefly describe each of the following methods and under what conditions they might be desirable. **Important:** What is the role of *randomization* in each method?

Name:

Date:

1. Stratified Random Sampling
2. Cluster Sampling
3. Systematic Sampling
4. Convenience Sampling

How is stratified sampling different from cluster sampling?

Homework: p. 43 (15, 18, 19, 23, 25, 28, 29, 32)

Section 2.3: Simple Comparative Experiments

Give a brief definition of an experiment using the words explanatory and response variables:

What is another word for explanatory variable?

What is the relationship between explanatory and response variables?

What is an extraneous factor?

Name:

Date:

What happens when two or more factors become confounded?

Discuss the importance of the four concepts in experimental design:

1. Randomization
2. Blocking
3. Direct Control
4. Replication

Read the example of "Anna the waitress" beginning at the bottom of page 50. Design your own experiment set in a workplace or similar environment that you have experienced. Be sure to include the key concepts outlined in the text.

Homework: p. 58 (33, 35, 39, 41, 42)

Section 2.4: More on Experimental Design

Use of a Control Group

Note: A control group is not mandatory for a good experimental design.

Name:

Date:

Briefly describe the purpose of a control group:

Use of a Placebo

When is it desirable to use a placebo?

Single-Blind and Double-Blind Experiments

Who is blind in a single-blind experiment and why?

Describe the process of creating a double-blind experiment:

Why would double-blind be preferable to single-blind?

Experimental Units and Replication

What is an experimental unit and how is it related to replication?

Using Volunteers as Subjects in an Experiment

Sometimes the use of volunteers is necessary, how is good experimental design preserved?

Homework: p. 64 (53-57, 59)

Name:

Date:

Section 2.5: Interpreting and communicating the Results of Statistical Analyses

Briefly summarize the issues that should be addressed when conducting an observational study:

1.

2.

3.

Briefly summarize the issues that should be addressed when conducting an experiment:

1.

2.

3.

A Word to the Wise: Cautions and Limitations

Briefly summarize the common mistakes when collecting data:

1.

2.

3.