AP Statistics Summer Assignment

Welcome to AP Statistics, future statisticians! The purpose of this assignment is to make you comfortable exploring data analysis. There are many new vocabulary terms that we will be discussing regularly! This assignment is due in class on Tuesday September 9, 2025.

Part I: Reading & Vocabulary: You will use a free online Statistical tutoring site that will give you information on variables and data displays. While reviewing the information on the site, create a vocabulary list using the vocabulary listed below.

- Go to: Stat Trek
- Click on "AP Statistics" then "AP Tutorial"
- On the left side of the screen is a list of general topics. Under each general topic are a list of subtopics. You will read the following subtopics to create the vocabulary list.
    - General Topic: Exploring Data
        - Variables
        - Population Vs. Sample
        - Central Tendency
        - Variability
        - Position
    - General Topic: Charts and Graphs
        - Charts and Graphs
        - Patterns in data
        - Dotplots
        - Histograms
        - Stemplots
        - Boxplots
        - Scatterplots
        - Comparing data sets

Part II: Answer each practice problem provided. You may use a graphing calculator which is required for this course.

I will check my email at various times throughout the summer, feel free to email any questions to Lombardo@SJBDHS.org

Vocabulary List:

- Categorical Variables –also known as qualitative (provide example and definition)
- Quantitative Variable (provide example and definition)
- Discrete Variable
- Continuous Variable
- Univariate Data
- Bivariate Data
- Population (provide example and definition)
- Sample (provide example and definition)
- Median
- Mean (include formula)
- Outlier
- Parameter
- Statistics
- Range
- Standard z-score (include formula)
- Center
- Spread
- Variance (include formula)
- Standard Deviation (include formula)
- Symmetry (include sketch)
- Unimodal (include sketch)
- Bimodal (include sketch)
- Skewness (include skewed left and skewed right sketch)
- Uniform (include sketch)
- Gaps (include sketch)
- Outliers (include sketch)
- Dot plots
- Bar chart
- Histogram
- Stemplot
- Boxplot
- Quartiles
- Range
- Interquartile range
- Four ways to describe data sets
- Types of graphs that can be used to compare data

Part II: Practice Problems

1. Identify each variable as quantitative or categorical (qualitative)

1. Time it takes to get to school
2. Number of people under 18 living in your household
3. Hair color
4. Temperature of a cup of coffee
5. Teacher salaries
6. Gender
7. Smoking
8. Height
9. Amount of oil spilled
10. Age of Oscar winners
11. Type of depression medication
12. Jellybean flavor
13. Country of origin
14. Type of meat
15. Number of shoes owned

2. One Variable Statistics

A statistic is a number collected from a sample of data. Quantitative data has many different statistics that can be calculated. Determine the given statistics from the data below on the number of home runs Mark McGuire hit in each season from 1982-2001.

70	52	22	49	3	32	58	39
39	65	42	29	9	32	9	33

Calculate the mean, minimum, maximum, median, Q1, Q3, Range and IQR for the data.

3. Dot plot

The data below gives the number of hurricanes that happened each year from 1944 through 2000 as reported by Science magazine.

Make a dot plot to display these data. Make sure you include appropriate labels, title, and scale. You may use graph paper to help you ensure that you space your markings appropriately.

3, 2, 1, 4,3, 7, 2, 3, 3, 2, 5, 2, 2, 4,2, 2, 6, 0, 2, 5, 1, 3, 1, 0, 3, 2, 1, 0, 1, 2, 3, 2, 1, 2, 2, 2, 3,1, 1, 1, 3, 0, 1, 3, 2, 1, 2, 1, 1, 0, 5, 6, 1, 3, 5, 3

4. Shopping Spree!

A marketing consultant observed 50 consecutive shoppers at a local supermarket. One variable of interest was how much each shopper spent in the store. Here are 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 stemplot using tens of dollars as the stem and dollars as the leaves. Be sure to include labels, title, and key. You can draw your stemplot on looseleaf.

5. Accidental Deaths

In 2007 there were 92,353 deaths from accidents in the United States. Among these were 42,340 deaths from motor vehicle accidents, 11, 858 from falls, 10,163 from poisoning, 4,051 from drowning, and 3,601 from fires. The rest were listed as "other" causes.

1) Find the percent of accidental deaths from each of the causes, rounded to the nearest percent.

- Motor vehicle accidents:

- Falls:
- Poisoning:
- Drowning:
- Fires:

2) What percent of accidental deaths were from the "other" causes?

3) NEATLY create a well-labeled **bar graph** of the distribution of causes of accidental deaths. Be sure to include an "other causes" bar. You can create your bar graph on looseleaf or graph paper.

6. Here is a formula that is used often in AP Statistics:

$$Z = \frac{x - \mu}{\sigma}$$

1) If z = 2.5, x = 102, and μ = 100, what is σ? Show your work.

2) If z = -3.35, x = 60, and σ = 4, what is μ? Show your work.

7. It is expected that you have a thorough understanding of linear functions.

1) The USDA reported that in 2000 each person in the United States consumed an average of 133 pounds of natural sweeteners. They also claim this amount has decreased by about 0.6 pounds each year.

   a) Write a linear equation that relates years since 2000 to the average consumption of natural sweeteners. Define your variables.

b) What is the slope and the *y*-intercept?

c) Predict the average consumption of sweeteners per person for the year 2015.

2) The following equation can be used to predict the average height of boys anywhere between birth and 15 years old: $y = 2.79x + 25.64$, where x is the age (in years) and *y* is the height (in inches).

a) What does the slope represent in this problem? Interpret it in context.

b) What does the *y*-intercept represent in this problem? Interpret it in context.

7. You are expected to have a basic understanding of simple probability.

1) A special lottery is to be held to select the student who will live in the only deluxe room in a dormitory. There are 100 seniors, 150 juniors, and 200 sophomores who applied. Each senior's name is placed in the lottery 3 times; each junior's name, 2 times; and each sophomore's name, 1 time. What is the probability that a senior's name will be chosen? **Show your work!!!**

a) $\frac{1}{8}$ b) $\frac{2}{9}$ c) $\frac{2}{7}$ d) $\frac{3}{8}$

e) $\frac{1}{2}$

2) If a fair coin is tossed twice, what is the probability that on the first toss the coin lands heads and on the second toss the coin lands tails? **Show your work!!!**

a) $\frac{1}{6}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) $\frac{1}{2}$

e) 1

3) If a coin is tossed twice, what is the probability that it will land either heads both times or tails both times? **Show your work!!!**

a) $\frac{1}{8}$ b) $\frac{1}{6}$ c) $\frac{1}{4}$ d) $\frac{1}{2}$

e) 1

4) Calculate the following probabilities and arrange them in order from least to greatest.

I. The probability that a fair die will produce an even number. _____

II. A random digit from 1 to 9 (inclusive) is chosen, with all digits being equally likely. The probability that when it's squared it will end with digit 1. _____

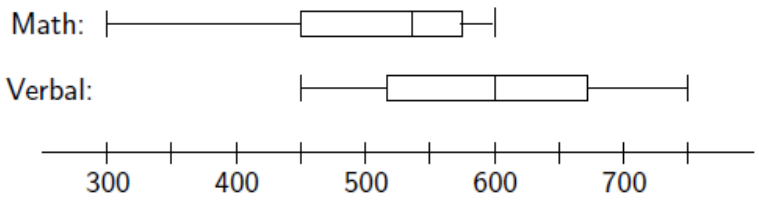
III. The probability that a letter chosen from the alphabet will be a vowel. _____

IV. A random number between 1 and 20 (inclusive) is chosen. The probability that its square root will not be an integer. _____

ORDER: _____, _____, _____, _____

Sample AP Question

The boxpolts below summarize the distribution of SAT verbal and math scores among students at an upstate New York high school.



Which of the following statements are true?

I. The range of the math scores equals the range of the verbal scores.

II. The highest math score equals the median verbal score.

III. The verbal scores appear to be roughly symmetric, while the math scores appear to be skewed to the right.

(A) I only

(B) III only

(C) I and II

(D) II and III

(E) I, II, and III _____