AP Statistics

Summer Packet

Welcome to AP Statistics! This is a very rigorous course that will delve into data analysis. You will be required to use your math skills, as well as your writing skills to be successful in this class.

This summer packet is designed to help you come into this class prepared for the rigor and rapid pacing of the course. It will help you understand the basic elements of statistics and you might even find that you already know a lot of the material.

AP Statistics can be a very fun class full of experiments and activities. I am looking forward to getting to know you and to helping you prepare for the AP exam. I hope you have a fun and safe summer. See you in August!

Sincerely,

Lisa DeMoya

Part 1: (50 points)

Go to the website stattrek.com. Under the word Browse, on the left side of the screen, click on AP Statistics under the Tutorials heading. Complete the first 4 tutorials:

1. The basics
2. Charts and Graphs
3. Regression
4. Categorical Data

Answer the questions regarding each sections. Record you answers on a separate sheet of paper. Please write neatly.

Questions

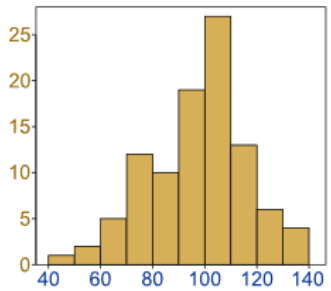
The Basics:

1. Data from a medical study contain values of many variables for each of the people who were the subjects of the study. Here are some of the variables recorded: gender; age in years, race, smoker, systolic blood pressure, level of calcium in the blood. Identify each as categorical or quantitative. For the quantitative variable, also classify them as continuous or discrete.
2. What tool can I use to generate a simple random sample?
3. The mean GPA of all incoming freshmen is an example of a _____.
   The mean GPA of a sample of 100 incoming freshmen is an example of a _____.
4. The following is a list of the heights of members of the school basketball team measured in inches.

   68 65 67 69 71 74 73 69 70 71 73 69

   Find the mean and median of the data. Then convert them to centimeters.

5. Using the data from #4, find the range, interquartile range, variance, and standard deviation. (using the measurements in inches)
6. Using the data from #4, find Q1 and Q3.
7. Using the data from #4, find the z-score and percentile of the player whose height is 70 inches.
8. Describe the center, shape and spread of the histogram below.

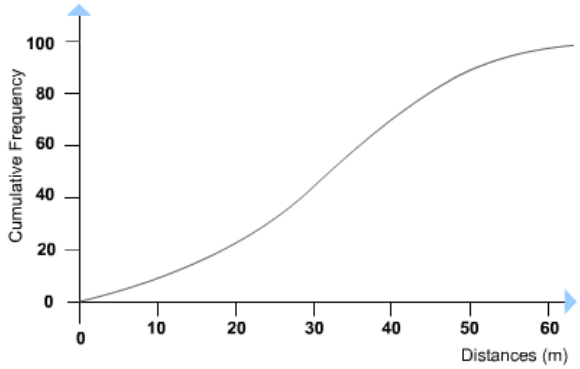


9. True or False: A bar graph is used for quantitative data.
10. True or False: A histogram is used for quantitative data.

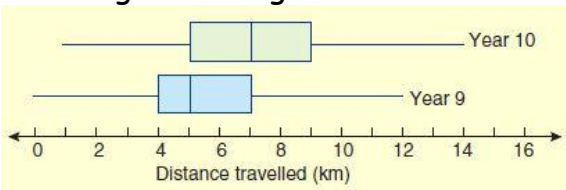
11. Describe the center, shape and spread of the stem plot below.

stem	leaf
1	6
2	2 4 8 9
3	0 1 1 2 3 4 5 6 7 8
4	0 5 8
5	0 1 8
6	1

12. Using the data from #4, create a box plot for the height of basketball players. Then describe its shape.
13. Using the cumulative frequency graph below, find Q1, the median, and Q3.



14. Compare the two box plots below. Be sure to include shape, outliers, center, and spread. Use comparison words like "longer" or "highest." Do not list each separately!



15. Make a scatterplot for the data below. The correlation of the data is 0.5. What is responsible for reducing the correlation to this value despite a strong straight-line relationship between x and y in most of the observations?

X	1	2	3	4	10	10
Y	1	3	3	5	1	11

16. A recent study discovered that the correlation between the age at which an infant first speaks and the child's score on an IQ test given upon entering elementary school is -0.68. Find and interpret the coefficient of determination for this situation.
17. When do outliers become influential points?

For #18 – 20, use the following two-way table.

	Spanish	French	German	Total
Boys	10	2	8	20
Girls	15	12	3	30
Total	25	14	11	50

18. What fraction of boys speak German and Spanish?
19. What fraction of girls speech French?
20. What fraction of all children speak German?

Part 2: (50 points)

Define all the terms on the definition page. These will be found as you complete the tutorials. Write the definitions on a separate sheet of paper.

Definitions

1. Variable
2. Qualitative (Categorical) variable
3. Quantitative variable
4. Discrete variable
5. Continuous variable
6. Population
7. Sample
8. Parameter
9. Statistic
10. Simple random sample (SRS)
11. Variance
12. Standard deviation
13. Percentile
14. Quartile
15. Center
16. Spread
17. Shape
18. Outliers
19. Cumulative frequency
20. Correlation coefficient
21. Independent variable
22. Dependent variable
23. Least Squares Linear Regression
24. Bivariate data
25. Coefficient of Determination
26. Standard Error
27. Residual
28. Influential point
29. Frequency Table
30. Relative Frequency Table
31. Marginal Frequencies
32. Joint Frequencies
33. Conditional Frequencies