

## 2017 AP Statistics Summer Work

Welcome to AP Statistics. The following questions should be answered on a separate sheet of paper. It will be collected the first day of school and will count as a test grade. If you have any questions please email me at: [resnak.paula@mail.fcboe.org](mailto:resnak.paula@mail.fcboe.org). I look forward to teaching you next year.

- Mrs. Paula Resnak

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1. Statistics is a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data.

a) How one collects data is important. Explain how you would conduct a survey to determine the percentage of students at FCHS who believe that the Tiger Token reward system improves behavior at our school.

b) Provide one example from your life in which you have worked with data. How did you collect it? How did you analyze it? What did you conclude?

2. Define **categorical data** and **quantitative data**. For each of the following determine if the data is quantitative or categorical.

a) Time it takes to get to school

b) Height

c) Number of people at a concert

d) Country of origin

e) Teacher's salaries

f) Gender

g) Type of meat

h) Temperature of a cup of coffee

i) Blood type

j) Age of people at a grocery store

3. Consider the following data set: {1, 2, 3,3, 3, 4, 5, 5}

a) What is the mean of the set?

b) What is the median?

c) What is the mode?

d) If the number 30 was added to the data set, what would the mean be? What would the median be? What would the mode be?

e) Which of the three values in part d changed more?

f) If you had 50 numbers in numerical order, the median would be the average of which two numbers?

g) Where would the median be located if you had 49 numbers in numerical order?

4. Keep a record of the number of hours of sleep you get each night during a two week period. Round each time to the nearest half-hour.

- Using your data, determine the measures of center: mean, median and mode.
- Which of these three values tells you about your "typical" sleep time?
- Determine the measures of variability: range, standard deviation, interquartile range.
- What do these tell you about how your sleep times vary?
- Use your data to create a dotplot, stemplot, histogram, and box and whisker plot.

5. Algebra Review:

a) Solve  $z = \frac{x - \mu}{\sigma}$  for  $\sigma$ , then for  $\mu$ .

b) Solve  $0.05 = 1.96 \sqrt{\frac{0.5^2}{n}}$  for n

c) If  $-1.64 = \frac{60 - \mu}{\sigma}$  and  $1.96 = \frac{95 - \mu}{\sigma}$ , solve for  $\mu$  and  $\sigma$

d) Find the equation of the line that passes through the points (-2, 4) and (5, 7)

e) Solve for x:  $\frac{x - 2.9}{1.5} = 2.38$

f) Solve for x:  $\ln x = 3.724$

g) Solve for x:  $\log 57.211 = .3x - 3.08$

5. Define the following terms:

- |                        |                             |
|------------------------|-----------------------------|
| a) Discrete Variables  | b) Continuous Variables     |
| c) Univariate Data     | d) Bivariate Data           |
| e) Population          | f) Sample                   |
| g) Outlier             | h) Parameter                |
| i) Statistics          | j) Standard Score (z-score) |
| k) Symmetry            | l) Unimodal                 |
| m) Bimodal             | n) Skewness                 |
| o) Skewed left         | p) Skewed right             |
| q) Percentiles         | r) Quartiles                |
| s) Observational Study | t) Experiment               |

6. Find a newspaper or magazine article involving statistics. Attach a hard copy of your article to your summer work. Write a summary of your article. If it is possible include how the data was gathered, whether the study was an observational study or an experiment, and what conclusions were drawn.