

POSNACK

S C H O O L

Statistics Honors Summer Assignment

Dear Students,

Welcome to Statistics! This class is going to be extremely interesting, challenging, and hopefully fun. It is impossible to cover all the material required in the time allotted, so you will have some work to do over the summer. The following packet contains topics and definitions that you will be required to know in order to succeed in. You must familiarize yourselves with each of the concepts. Upon your return, we will review this material.

You can also go to www.stattek.com which is an excellent source of reference material. You must learn to navigate the Microsoft Excel chart-making software. This is the software we will be using in class. Follow these steps:

1. Open an Excel document. You may need to add the Data Analysis Add-in
2. Click "File" then "Options" at the bottom on the left
3. Click "Add-ins" on the left, then "Manage" at the bottom
4. From the drop-down box, click "Excel Add-ins" then "Go"
5. The following four boxes should be checked:
 - A. Analysis ToolPak
 - B. Analysis ToolPak-VBA
 - C. Euro Currency Tools
 - D. Solver Add-in
6. Click "Ok"

Now you will have the ability to make bar charts, pie charts, scatter plots, and line graphs with Excel.

To make a chart, follow these steps:

1. Open an Excel document
2. Click the "Insert" tab at the top of the page
3. In the middle at the top, you will see "Recommended Charts" and to its right, you will see the different types of charts you can use: bar graphs, pie charts, scatter plots, line graphs, etc.
4. Click on the desired type of graph and practice trying to make bar charts, pie charts, and scatter plots

There are plenty of YouTube and Khan Academy videos to help you learn to navigate the chart making abilities of Excel, and believe it or not, it's actually fun! I will expect you to have this software on your computer on the first day of school.

Have a great summer!

PART 1 - Definitions

Write a 1 or 2 sentence definition for each of the following vocabulary words. You can use your online textbook if needed. www.stattek.com is a good resource!

1. **Mean:**
2. **Median:**
3. **Mode:**
4. **Range:**
5. **Categorical Variables:**
6. **Quantitative Variables:**
7. **Population:**
8. **Sample:**
9. **Parameter:**
10. **Statistic:**
11. **Random Sample:**
12. **Outlier:**
13. **Center:**
14. **Spread:**
15. **Symmetry:**
16. **Dot Plot:**
17. **Stem Plot:**
18. **Box Plot:**
19. **Quartiles:**
20. **Interquartile Range (IQR):**
21. **Left Skewed:**
22. **Right Skewed**

Part 2: Probabilities

1. A lottery is to be held to select the student who will live in the deluxe room in a dormitory. There are 100 seniors, 150 juniors, and 200 sophomores who applied. What is the probability that a junior will be chosen?

- A. $\frac{1}{8}$ B. $\frac{2}{7}$ C. $\frac{1}{2}$ D. $\frac{1}{3}$ E. $\frac{3}{8}$

2. Which of the following has a probability closest to 0.5?

- A. The sun will rise tomorrow.
B. It will rain tomorrow.
C. You will see a dog with only three legs when you leave the room.
D. A fair die will come up with a score of 6 four times in a row.

3. If a coin is tossed twice what is the probability that it will land on heads both times?

- A. $\frac{1}{8}$ B. $\frac{1}{4}$ C. 1 D. $\frac{1}{6}$ E. $\frac{1}{2}$

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 the number is divisible by 3. _____
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 it is a perfect square. _____

ORDER: _____, _____, _____, _____

Part 3: Measures of Central Tendency

Find the mean, median, mode and range of the following data sets:

1.

154	109	137	115	152	140	154	178	101
103	126	126	137	165	165	129	200	148

Mean:

Mode:

Median:

Range:

2.

16	16	17	16	18	17	17	16	16	27	16	17	16	17	16	16
17	18	19	20	18	19	20	18	18	17	16	18	19	17	18	25

Mean:

Mode:

Median:

Range:

Part 4: Fractions, Percents, Decimals

Write each fraction as a percent

1. $\frac{35}{100}$

2. $\frac{12}{20}$

3. $\frac{9}{25}$

4. $\frac{3}{8}$

Write each decimal as a percent

5. **0.13**

6. **0.85**

7. **0.07**

8. **0.875**

Write each percent as a fraction or a mixed number in lowest terms.

9. **36%**

10. **70%**

11. **12%**

12. **110%**

Write each percent as a decimal.

13. **31%**

14. **12.5%**

15. **95%**

16. **0.0125%**

Part 5: Categorical or Quantitative?

Determine if the variables listed below are quantitative or categorical. Place an “X” in the appropriate column.

Variable	Categorical (Qualitative)	Quantitative
Time it takes to get to school		
Number of minors living in a household		
Hair color		
Temperature of a cup of coffee		
Salary		
Gender		
Smoking status		
Height		
Amount of milk spilled		
Age of Oscar winners		
Type of shoes worn		
Jelly bean flavor		
Type of cheese		
Number of shoes owned		