AP Statistics Summer Packet



Welcome to AP Statistics! As an advance placement class, you can expect that AP Stats will be fast paced and challenging, but also very interesting. The study of statistics is unlike any math class that you have taken before. AP Stats acquaints students with the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There is heavy emphasis on the ability to think, reason, explain and support your conclusions as opposed to just performing computations. Writing and reading comprehension are important components to the course as a large part of this class is clear communication and interpretation of data.

To help prepare you for our course, you will need to read the attached first chapter of our textbook and then follow the directions given on the next page. Try your best to complete all questions. There will be an assessment on this material during the first week of class. Good Luck!

If you have any questions as you work you can email me using <u>sara.starnes@knoxvillecatholic.com</u>, I will probably be checking my email once a week.



Name:

***Read the attached chapter 1 from our textbook and fill in this guide to aid in your understanding. If you have access to a printer then print this guide and fill it in right on the printout, if you do not have access to a printer then write out your answers on paper, you do not need to rewrite the questions.

Chapter 1 Reading Guide:

1. Define variable:

2. Explain the difference between a categorical variable and a quantitative variable. Give an example of each.

3. Give an example of a categorical variable that has number values.

4. Define distribution:

5. Define inference:

1.1: Analyzing Categorical Data

1. What type of data are pie charts and bar graphs used for?

2. What is a two-way table?

1.2: Displaying Quantitative Data with Graphs

1. What is a dotplot? Draw an example.

3. Draw and example of the following distributions:

Channed Dialet	
Skewed Right	
Skowed Loft	
Skewed Leit	
Summer atria	
Symmetric	
Unimodal	
	
Bimodal	
iviuiti-iviodai	

4. When examining a distribution, you can describe the overall pattern by its

5. When is it beneficial to split the stems on a stemplot?

6. When is it best to use a back-to-back stemplot?

1.3: Describing Quantitative Data with Numbers

1. What is the meaning of Σ ?

2. Explain the difference between x and μ .

3. Define resistant measure:

4. Explain why the mean is not a resistant measure of center.

5. Explain why the median is a resistant measure of center.

6. Is the range a resistant measure of spread? Explain.

7. Define Interquartile Range (IQR). How do you find the first quartile Q1 and third quartile Q3?

8. Is the IQR and the quartiles a resistant measure of spread? Explain.

9. How is the IQR used to identify outliers?

10. What is the five-number summary of a distribution?

11. Explain how to use the five-number summary to make a boxplot. (Draw a picture!!!)

12. What does the standard deviation measure?

13. What is the relationship between variance and standard deviation? What is the mathematical relationship between variance and standard deviation?

14. Which measures of center and spread are more reliable for the distributions below:

	Symmetric Distribution	Skewed Distribution
Center		
Spread		

Name:

Date:

Answer the following questions from Section 1.1, again if you have access to a printer then print this guide and fill it in right on the printout, if you do not have access to a printer then write out your answers on paper, you do not need to rewrite the questions.

Chapter 1.1 Practice Problems

Below is some information about films for the Best Movie Academy Award (Oscar) in 2009.

		Budget	Total # of		
		(millions of	Oscar	Running time	MMPA
Name	Genre	dollars)	Nominations	(minutes)	Rating
Avatar	Adventure	237	9	162	PG-13
The Blind Side	Drama	29	2	128	PG-13
District 9	Action	30	4	112	R
An Education	Drama	7	3	95	PG-13
The Hurt Locker	Action	11	9	131	R
Bravehart	Drama	70	8	153	R
Precious	Drama	10	6	110	R
A Serious Man	Comedy	7	2	106	R
Up	Animated	175	5	96	PG
Up in The Air	Comedy	30	6	109	R

- 1. What are the individuals in this data set?
- 2. Identify the variables that were recorded, and indicate whether each one is categorical or quantitative.
- 3. Here is a pie chart for the distribution of the variable MMPA rating. Fill in the blanks with the appropriate values of the variable.
 4. Below is a graph showing the total number of Oscar nomination for the four films that had PG or PG-13 ratings. What's wrong with the way the informations presented in this graph?

Avatar

Up

The

Blind Side

An

Education

Researchers looking at the relationship between the type of college attended (public or private) and achievement gather the following data on 3265 people who graduated from college in the same year. The variable, management level, describes their job description 20 years after graduating from college.

	1	Type of College			
		Public	Private		
	High	75	107		
Management level	Medium	962	794		
	Low	732	595		

- 5. Calculate the marginal distribution of management level in percents.
- 6. Find the conditional distribution of management level for each college type, in percents.

7. Sketch a segmented bar graph for the two conditional distributions in 6.



8. Write a brief description of what the information in 6. and 7. tell you about the relationship between these variables.