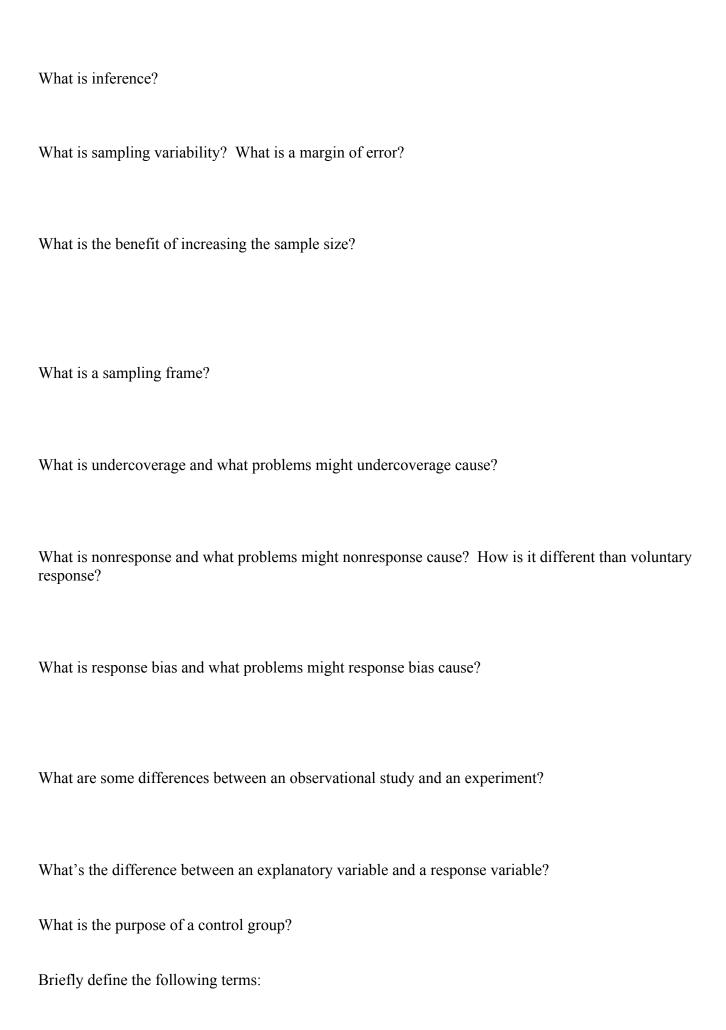June 12, 2017

Welcome to AP Statistics. Attached is your summer work. You will be required to read the chapter in your text book covering sampling methodology and experimental design. Depending on which class you are in next year, you will either be using *The Practice of Statistics 2nd Edition* or *The Practice of Statistics 5th Edition.* In the 2nd edition, you will be reading chapter 5. In the 5th edition, you will be reading chapter 4. As you read, answer the attached questions.

Consider this your notes on this chapter. You may want to reorganize the major ideas into an outline format for future reference. While we do not have mandated problems for you to work out, we advise you to answer the odd numbered problems as solutions are in the back of the book. You should be comfortable answering any question from this chapter. Be advised that your first graded assignment of the school year will take place on day one and will be related to your summer work.

Enjoy your summer, have fun, and work hard!

Mr. Bracy and Mr. Kalloger

What's the difference between a population and a sample? What is a census?

What's the problem with convenience samples?

What is bias?

What's a voluntary response sample? Is this a good method for obtaining a sample?

What's a simple random sample (SRS)? How can you choose a SRS?

What's the difference between sampling *with* replacement and sampling *without* replacement? How should you account for this difference when using a table of random digits or other random number generator?

What is a stratified random sample? How is it different than a simple random sample?

When is it beneficial to use a stratified random sample? What is the benefit? How do you choose a variable to stratify by?

What is a cluster sample? Why do we use a cluster sample? How is it different than a stratified sample? Are there any drawbacks?

What is inference?

What is sampling variability? What is a margin of error?

What is the benefit of increasing the sample size?

What is a sampling frame?

What is undercoverage and what problems might undercoverage cause?

What is nonresponse and what problems might nonresponse cause? How is it different than voluntary response?

What is response bias and what problems might response bias cause?

What are some differences between an observational study and an experiment?

What's the difference between an explanatory variable and a response variable?

What is the purpose of a control group?

Briefly define the following terms:

- Treatment

- Experimental units

- Subjects

- Factor

- Level

What is the purpose of random assignment?

How do we randomize? What is a completely randomized design?

What is replication?

What does it mean to control other variables?

What is a single-blind experiment? A double-blind experiment? Why is blindness important?

What is the placebo effect?

What does it mean if the results of an experiment are statistically significant?

What is the benefit of blocking?

In general, how can we determine which variables might be best for blocking?

What is the difference between blocking and stratifying?

What is a matched pairs design?