**Final Project for AP Stats**

**Purpose:** The purpose of this project is for you to actually do statistics. You are to (1) formulate a statistical question, (2) design a study or experiment to answer the question, (3) conduct the study or experiment, (4) collect the data, (5) analyze the data, and (6) use statistical inference (confidence intervals and significance tests) to answer the question. You are going to do it all!!

**Topics:** You may do your study on any topic, but you must be able to include all 6 steps listed above. Make it interesting and note that degree of difficulty is part of the grade. *Special bonus for projects that use a line of best fit!*

**Group Size:** You may work alone or with a partner for this project.

**Proposal (25 points):**

To get your project approved, you must be able to demonstrate how your study will meet the requirements of the project. In other words, you need to clearly and completely communicate your statistical question, the explanatory and response variables, your null and alternative hypothesis, the test you will use to analyze the results, and how you will collect the data so the conditions for inference will be satisfied. You must include at least two graphs of imaginary data: one graph for a study when there is a clear significant answer to the research question of interest and another graph for a study whose data are ambiguous. If your proposal isn’t approved, you must resubmit the proposal for partial credit until it is approved.

**Poster (75 points):**

The key to a good statistical poster is communication and organization. Make sure all components of the poster are focused on answering the question of interest and that statistical vocabulary is used correctly. The poster should include the following:

* **Title** (in the form of a question).
* **Introduction**. In the introduction you should discuss what question you are trying to answer, why you chose this topic, what your hypotheses are, and how you will analyze your data.
* **Data Collection**. In this section you will describe how you obtained your data. Be specific.
* **Graphs, Summary Statistics, and the Raw Data** (if numerical). Make sure the graphs are well labeled and easy to compare. Use the graphs and summary statistics to describe the evidence (if any) for the alternative hypothesis. Use the applet to create graphs.
* **Analysis**. Do the appropriate 4-step significance test AND 4-step confidence interval. Discuss how both lead you to the same conclusion.
* **Conclusion**. In this section, you will state your conclusion. You should also discuss any possible errors (e.g., Type I or Type II), limitations to your conclusion, what you could do to improve the study next time, and any other critical reflections.
* Live action pictures of your data collection in progress.

**DUE DATES**: Proposal: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Poster: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_