**Instructions:**

1. Create a simple random sample from the data set (Excel document) from www.mshache.weebly.com

* Using randInt(1, 600) on the calculator, randomly select **50** people for your sample. As you select each person, highlight the row in the excel document of the person you selected.
* Save the excel document on your student drive. Share the excel document.

Now you can start your power point and your data analysis.

* On your power point, put a title slide, and an introduction.
  + IN YOUR OWN WORDS, introduce what you will be analyzing in this project. Which questions did you and your partner choose to answer (#2 - #8).
* On the next slide, write **clear instructions** on how you found your sample.
* **Using your sample**, answer all of the following questions:

1. Are the final exam scores averaging less than a 75%?

* Create a histogram and boxplot of the final exam scores
* Find summary statistics of the scores (you know which ones by now!)
* Describe the distribution (shape, center, spread) based on the histogram/boxplot and using appropriate summary statistics

1. Do more males take this class than females?

* Create a one-way table of gender. Type this table into Excel. Put the excel table into your power point.
* Create a bar chart of the frequency of gender

1. Are the final exam scores the same for males and females?

* Create parallel boxplots and histograms for final exam scores separated by Gender
* Find summary statistics for the final exam scores separated by Gender
* Describe and COMPARE the two distributions using the graph and appropriate summary statistics (shape, center, spread for each gender & compare each!)

1. Is there a relationship between midterm scores and final exam scores?

* Create a scatterplot of Midterm scores vs. Final Exam scores (copy this onto your ppt)
* Describe the scatterplot (form, direction, strength)
* Add the Least Squares Regression Line (LSRL) to the plot (copy this graph ALSO onto your ppt)
* Find the LSRL using your graphing calculator (use a MODEL) & write this on your powerpoint (don’t forget the hat!)

1. Are majors evenly distributed?

* Create a table of “Choice of major”. Type this into Excel. Copy the Excel table to your power point.
* Create a bar chart of majors

1. Your awesomeness: Brief paper about you.

The first paragraph should tell me about your plans for the future: Are you going to college/university? What school will you be attending? What city and state will you be moving to? Will you be living on your own? What particular major will you be studying? Tell me about possible career interests and why you are interested in that field. If you are not going to college, then what is your plan?

The second paragraph should tell me about your short term plans: What will you be doing this summer? Tell me if you are planning any vacations. Are you going to be working? If so, where? If you are staying in Chicago, what type of past time activities will you be participating in? Are there any parts of our beautiful city you plan to visit that you can share with us?

In the third and last paragraph, tell me about something you will remember from our math course. It can be a particularly good experience or a particularly bad experience. Or describe a day that stood out in some way. Give me some feedback on how AP Statistics was. Was it what you thought it would be? Was it too easy, too hard? Boring? Exciting? You will not be penalized for being truthful. Also mention what score you think that you will receive on the AP exam and also tell me what grade you feel you deserve in this class and why.

**GRADING RUBRIC**

**ITEM POINTS DEDUCTED**

1. Introduction
   1. Introduction \_\_\_\_ 3
   2. Random Sample: Description of sampling technique \_\_\_\_ 5
   3. Random sample taken appropriately \_\_\_\_ 2
2. Are the final exam scores averaging less than a 75%?
   1. Histogram & boxplot \_\_\_\_ 2
   2. Summary Statistics \_\_\_\_ 3
   3. Appropriate description (Shape, Center, Spread) \_\_\_\_ 5
   4. Inference Test \_\_\_\_ 18
      1. Hypotheses (2), Conditions/statement (5), Test Statistic (3)
      2. P-Value/df (4), Conclusion (4)
   5. Confidence interval \_\_\_\_ 7
      1. Statement and equation with interval (5), Conclusion (2)
   6. Does conf. int. agree with test (3) \_\_\_\_ 3
3. Do more males take this class than females?
   1. Table of gender \_\_\_\_ 1
   2. Bar Chart \_\_\_\_ 2
   3. Sample Proportions of males and females \_\_\_\_ 2
   4. Inference Test \_\_\_\_ 17
      1. Hypotheses (2), Conditions/statement (5), Test Statistic (3)
      2. P-Value (3), Conclusion(4)
   5. Confidence interval \_\_\_\_ 7
      1. Statement and equation with interval (5), Conclusion (2)
4. Are the final exam scores the same for males and females?
   1. Parallel Boxplots & Histograms \_\_\_\_ 3
   2. Summary Statistics of both genders \_\_\_\_ 6
   3. Appropriate comparisons(Shape, Center, Spread) between the genders \_\_\_\_ 8
   4. Inference Test \_\_\_\_ 19
      1. Hypotheses (2), Conditions/statement (6), Test Statistic (3)
      2. P-Value/df (4), Conclusion (4)
   5. Would 0 be in the confidence interval? \_\_\_\_ 2
5. Is there a relationship between midterm scores and final exam scores?
   1. Scatterplot, and separate one with LSRL on it \_\_\_\_ 4
   2. Description (form, direction, strength) \_\_\_\_ 3
   3. LSRL stated \_\_\_\_ 3
   4. Slope interpretation \_\_\_\_ 3
   5. Correlation \_\_\_\_ 1
   6. r2 interpreted \_\_\_\_ 3
   7. Residual plot \_\_\_\_ 2
   8. 2 students predictions (work shown) \_\_\_\_ 6
   9. Residuals for 2 students predictions (work shown) \_\_\_\_ 4
   10. Strength and appropriateness of linear model (with justification) \_\_\_\_ 4
   11. Inference Test \_\_\_\_ 21
       1. Hypotheses (2), Conditions and statement (7), Test Statistic (3)
       2. P-Value/df (4), Conclusion (5)
6. Do students tend to do worse on the final exam than the midterm exam?
   1. Histogram & boxplot of differences \_\_\_\_ 3
   2. Summary Statistics of differences \_\_\_\_ 3
   3. Inference Test on differences \_\_\_\_ 20
      1. Hypotheses (3), Conditions/statement (6), Test Statistic (3)
      2. P-Value/df (4), Conclusion (4)
7. Are the majors uniformly distributed?
   1. Table of majors \_\_\_\_ 2
   2. Bar chart of majors \_\_\_\_ 3
   3. Inference Test \_\_\_\_ 23
      1. Hypotheses (3), Observed/expected tables (2), Conditions/statement (5)
      2. Test Statistic (5), P-Value/df (4), Conclusion (4)
8. Is there an association between gender and choice of major?
   1. Inference Test \_\_\_\_ 23
      1. Hypotheses (3), Observed/expected tables (2) , Conditions (5)
      2. Test Statistic (5), P-Value/df (4), Conclusion (4)
   2. Segmented bar chart \_\_\_\_ 4
   3. Describe the bar chart \_\_\_\_ 3
9. Conclusion slides \_\_\_\_ 10
10. Your awesomeness: Brief paper about you. \_\_\_\_ 80
    1. All three paragraphs are included
    2. Typed and is emailed or turned in

100 points must come from #2 - #8. You are free to choose how to receive those points. \_\_\_\_

20 points must come from #1 and #9 (intro & conclusion) \_\_\_\_

80 points must come from #10 \_\_\_\_

TOTAL: \_\_\_\_\_\_ / 200