**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Math 127 – Test 1 – Summer 2016**

**This is an individual assignment.**

**Students may not work together or consult the Math Lab staff.**

**Do not check your answers with your classmates.**

**Any suspicious answers will be investigated, and your instructor has a peculiar brain that recognizes similarities. Don’t cheat, because you will be caught.**

**The penalty for cheating on this exam is a grade of 0% for Math 127 Exam 1.**

**Oath: “*I understand what’s being said above. I won’t cheat on this exam. If I do, I’ll get a 0 and Professor Kupe will be severely disappointed in my actions.”***

**Sign Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Student Instructions**

**1.** This test is graded out of 100 points and counts for 1/7 = 14.28% of your Math 127 grade.

**2.** Show work or points will be deducted. If you only report an answer and it is wrong, you will receive no credit.

**3.** Turn in this paper with your handwritten answers.

**Due Date:**

**Morning Class**, Math 127 01 – Due Wednesday, June 29 at 12:00 noon.

**Night Class**, Math 127 02 – Due Wednesday, June 29 at 5:00 pm.

The answer key will post Wednesday evening, and graded exams will be returned your next class meeting.

Good luck! I’m rooting for you.

**1.** StatCrunch skills and data analysis. Load up the “**2010 Movie Revenue”** dataset. Round all summary statistics to two decimals if necessary. Give all percentages rounded to two decimals, e.g. 13.58%. **(4 points each)**

**1a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** What percentage movies were rated “***PG-13***”?

**1b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** How many movies did “***Lionsgate***” release?

**1c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Give the mean “***Tickets Sold***”.

**1d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Give the mean “***Tickets Sold***” for “***Summit Entertainment’s***” movies.

**1e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** How many “***R***” movies did “***Sony Pictures***” release?

**1f. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** How many movies sold at least 1,000,000 tickets?

**1g. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** How many movies sold at most 10,000 tickets?

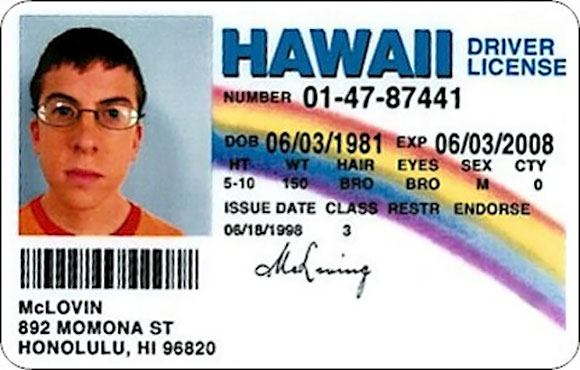
**1h.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 95th percentile for “***Tickets Sold***”.

**1i.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Convert “***Tickets Sold***” for “***Jackass 3D***” to a *z*-score and show the calculation here:

**1j.** Give a range of values for “***Tickets Sold***” that would not be unusual. Use the idea of *z*-scores. Your answer should be an interval of values. Show calculation here:

**1k.** There are 134 movies that are official high outliers. Give the “***Movie***” title of the first movie that is an outlier. I’m looking for the smallest high outlier. The answer is not “***Toy Story 3***”.

Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**2. (4)** Here is McLovin’s driver license.

**Type of Variables (Q, C, or I): “*Number*” \_\_\_\_\_\_\_\_ “*HT*” \_\_\_\_\_\_\_ “*WT*” \_\_\_\_\_\_\_**

**“*Hair*” \_\_\_\_\_\_\_ “*Eyes*” \_\_\_\_\_\_ “*Sex*” \_\_\_\_\_\_\_\_**

**“*Class*” \_\_\_\_\_\_\_\_\_ “*Zip Code*” \_\_\_\_\_\_\_\_\_\_**

**3. (3)** We break Cecil College into student groups – teens, 20s, 30s, 40s, 50s, 60+ – and we take a random sample of size *n* = 10 from each group. We ask for input on designing a parking garage. What is the sampling method?

Sampling method: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. (3)** We break Cecil College into student groups – the majors – accounting, art, etc... – randomly select one major, and then survey everyone in that major. We ask for input on college tuition and financial aid.

Sampling method: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5. (3)** How many IQRs apart are the Lower Fence and the Upper Fence? \_\_\_\_\_\_\_\_\_

Show calculation or reasoning below:

**6.** In the “**Darts**” dataset on StatCrunch, we have the results of a designed experiment. Three students were recruited to see if “***Accuracy***” was affected by either “***Distance***” or “***Hand***” used.

“***Accuracy***” is the number of inches a dart is from the bull’s-eye. **Smaller** numbers are better!

**6a. (2)** Response Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6b. (2)** Factor 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Factor 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6c. (2)** Which “***Hand***” is the most accurate? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Justify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6d. (2)** Which “***Distance***” is the most accurate? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Justify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6e. (2)** Which “***Student***” is the most accurate? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Justify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6f. (2)** Give Student 3’s mean “***Accuracy***” from “***Near***” distance with her “***Right***” hand: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7. (5)** Describe the distribution of “***Weeks Worked Last Year”*** in the “**General Social Survey 2008**” dataset. Bullet points are OK, use the values of the best summary statistics in your write up.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8. (4)** In our “**Retired -** **Calendar Year 2016 Large Survey**” dataset, argue if “***Gun Ownership***” and “***Politics***” are independent or dependent variables. Support with conditional percentages. Make a concluding remark about the two variables.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**9a. (4)** Use our “**Retired -** **Calendar Year 2016 Grocery Prices**” to calculate the fences for “***Wal Mart Price***”. Show your calculations.

**9b. (2)** How many low-valued outliers are in the dataset for “***Wal Mart Price***”? \_\_\_\_\_\_\_\_\_\_\_\_

How many high-valued outliers are in the dataset “***Wal Mart Price***”? \_\_\_\_\_\_\_\_\_\_\_\_

**10. (10)** Use the “**US News National University Rankings**” dataset.

Report your answers as 54 / 67 = 0.8060 = 80.60%.

**10a.** Percentage of all schools that are from “***Texas***”.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10b.** Percentage of “***Texas***” schools that are “***Private***”.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10c.** Percentage of “***Private***” schools that are from “***Texas***”.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10d.** Percentage of all schools with “***Enrollment***” exceeding 15,000.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10e.** Percentage of all schools with “***6yr Grad rate***” under 80%.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11.** Use the “**Maryland Sewer Overflows**” dataset on StatCrunch.

**11a. (2)** Find the maximum “***Quantity in Gallons***” for “***Cecil County***”.

Report the “***Overflow Case Number***”: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11b. (2)** Which “***Zip Code***” had the highest mean “***Quantity in Gallons***”?

Report the “***Zip Code***”: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11c. (2)** What is the best measure of center and spread for “***Garrett***” county’s “***Quantity in Gallons***”?

Center: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Spread: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_