Instructions: You may use your note card, but all work needs to be shown and appropriate formulas need to be given and substituted into. For instance if I ask for the mean you may not just give the answer from your calculator. I expect to be given the formula: x-bar = $\sum x/n$ and have the $\sum x$ given and n given. The $\sum x$ can be from your calculator, but I want it written down.

1. The following data represents the number of grams of fat in 11 randomly sampled McDonald's breakfast meals. Compute the following for this data.
   1, 8, 11, 12, 16, 17, 23, 28, 28, 33, 40

a) What level of measure is the data? (circle the correct answer)
   i) interval ii) ratio iii) nominal iv) ordinal

b) Calculate the mean of the data. Use correct notation. Show your plugging into the formula.

c) Calculate the variance of the data. Use the exact variance to calculate the standard deviation. Use correct notation. Show how you plug into the formula but it is OK to let the calculator tell you the final answer.

d) Give the 5 number summary for the data. Be sure to calculate the indicator/locator functions for Q_1 and Q_3.

e) Draw a boxplot for the data.

f) What is the skew of the data? Give a brief discussion supporting your answer. Use your box plot and mean, median and mode in your discussion supporting your answer.

i) Based on the skewness of the data, what amount of the data would you expect to find within 2 standard deviations of the mean? Quote a Theorem or Rule to support your percentage.

j) Are there any outliers in this data? If so list them. Support your answer with a discussion that includes the IQR and shows computations for any specific values.

k) Give the z-score of the 6th ordered data point (from the low end).

2. Based on the following 2 way table answer the following questions. The data represents the number of white/black voters (Democratic) in a poll conducted by Quinnipiac University concerning support for Clinton/Obama. Give the correct notation for the probability that you are determining. Recall round-off rule for probabilities!!

	Clinton	Obama	Other/Undecided
Female Voter	61	33	7
Male Voter	18	76	6

a) What is the probability that a randomly chosen voter supports Clinton?

b) What is the probability that a randomly chosen voter is male and supports Obama?

c) What is the probability that a randomly chosen voter is woman or supports Clinton?

d) Of those that support Obama, what is the probability that a randomly chosen voter is male?

3.   A statistics student polled 17 Democrats to see if they supported Obama. The student recorded a Y for yes and an N for no or undecided. The following are the results:

N Y N N Y N Y N Y N Y Y N Y Y N Y

a)   What is the relative frequency probability that a randomly selected Democrat will support Obama?   Show all work.

b)   If it is known that 54.5% of Democrats support Obama, calculate the probability that in a sample of 17, exactly 9 Democrats will support Obama. Show your work using the binomial formula. You may use your calculator to find the answer, but the binomial formula must be used for plug-in.

c)   Calculate the **approximate** probability that 9 or more Democrats support Obama in a sample of 17 if it is known that 54.5% of all Democrats support Obama. Show your work for normalizing and don't forget continuity correction.

d)   Suppose you go out and take a poll of 3 Democrats. Write a probability distribution function for the random variable X that represents the number of Democrats in a sample of 3 that support Obama if the probability that a randomly chosen person will support Obama is $^9/_{17}$. Round your probabilities to 5 decimals (hundred thousandths place)

e)   What is the probability of fewer than 2 Democrats in a sample of 3 supporting Obama according to your pdf in part d? Round to 5 decimals (hundred thousandths place)

f)   If the true population proportion for Democrats that support Obama is 54.5% calculate the mean and the standard deviation for a random sample of size 17.

g) Using the information in part f), in a random sample of 17, what are the highest and lowest number of Democratic supporters of Obama would you "usually" expect to find? (Give your answer as an interval.)

4. Assuming that Z is a N(0,1), what is P(-2.36 < Z < -1.10)?

5. Credit ratings are N(200, 50), find
   a) The probability that your credit rating is 550 or below. Show all work including correct notation.

   b) The credit rating that represents the 60th %tile, P$_{60}$ (the score that separates the lower 60% from the upper 40%).

   c) In a sample of 25 friends, what is the probability that the average credit rating will be above 550? Show all work including correct notation.