These are the basic skills we have developed:

Some basics of data collection We discussed several basics of data collection. You should be able to do a skeptical evaluation of presented data.

How to make and interpret graphs We know histograms, bar graphs, pie charts, scatter plots, stem-and-leaf plots, box plots etc. You should be able to interpret them and create them.

Summary measures That is, the mean, median, correlation coefficients (Pearson and Spearman), regression coefficients. We have learned how to create and interpret these numbers generated by the data set.

Distributions of data We learned how to visualize the distribution of a variable. You should be familiar with some terms such as skewness and be able to identify the mean and median from a graphical distribution.

Probability We discussed some basic of probability. You should be able to do 'intuitive probability". You should be familiar with the binomial model and the normal distribution. You should be able to compute with MINITAB or with the z-score and p-value of a data point.

MINITAB skills With MINITAB you should be able to download and view a data set, how to find statistics of a variable such as minimum, maximum, mean, median, trimmed mean etc. You should be able to graphically view the data. You should be able to make a scatter plot of bivariate data and to add a regression line.

Here are some sample problems. To be clear, there is no implication that the questions asked here bear any resemblance to those that will appear on the exam. In addition, be prepared to answer MINITAB questions similar to the ones on the two projects.

**Chapter 1 From the Book** 1.19 ,1.38, 1.40, 1.54, 1.78

    Others   1. In order to test the new CPE exam a pool of 60 students was formed by posting a notice and accepting all that replied. Comment on the appropriateness. (This isn't how it happened really)

Chapter 2 From the Book 2.12, 2.15, 2.30, 2.56, 2.61, 2.62, 2.78, 2.88 (make a stem-and-leaf chart first the mean is 23.9, sd=6.25), 2.106
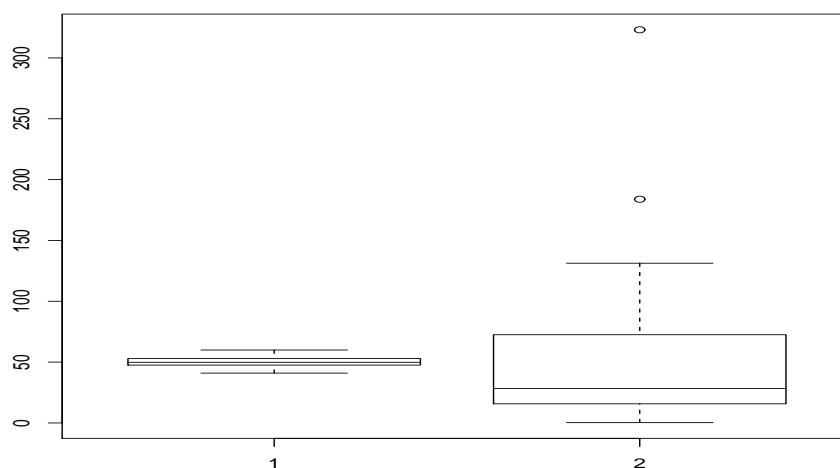
    Others   1. Estimate the mean, Median, standard deviation, Q_1 and Q_3 of

Histogram of x
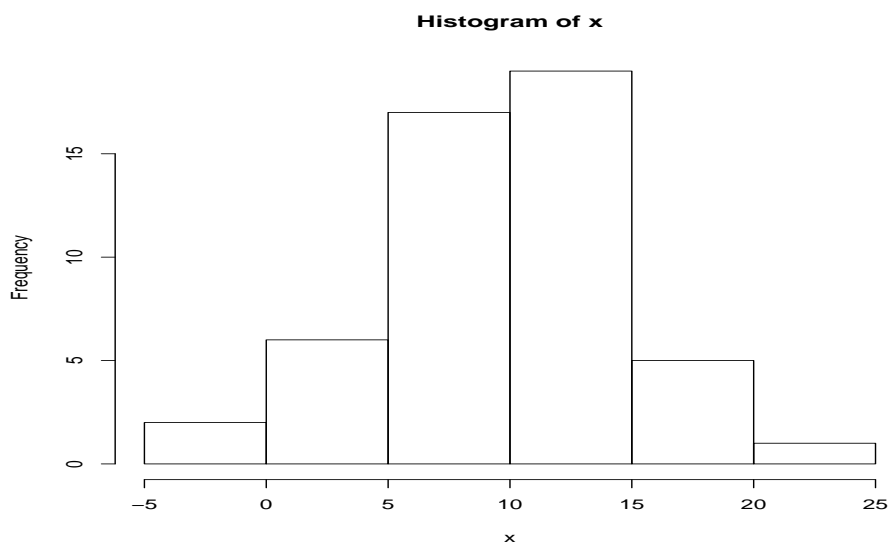
2. Estimate the mean, Median, standard deviation, Q_1 and Q_3 of

Histogram of x
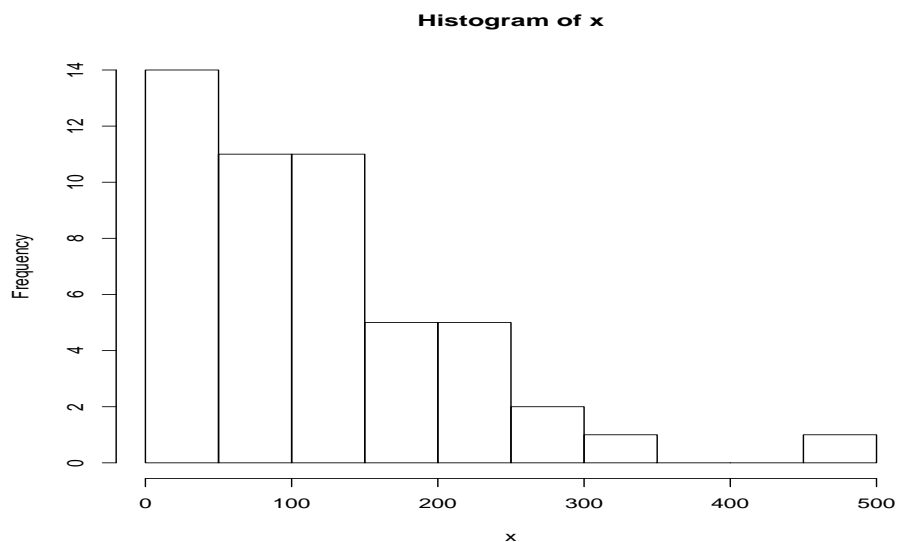
3. Do the two boxplots look like they came from the same distribution? Why or why not? Do they seem to have the same median? The same mean? Comment.

4. It is reported that the mean housing price on Staten island is $300,000 and the median housing price is $250,000. Please explain.

Chapter 3 From the Book 3.4, 3.9, 3.19, 3.27 a, 3.49, 3.51, 3.58,

Others   • Census figures have been release recently of state population by race and ethnicity. Here is a table from the NY Times

Choosing the Mixed-Race Option

The 2000 census was the first to give respondents a chance to identify themselves as belonging to more than one racial category. Younger blacks were more likely than older blacks to identify themselves this way.

|	IDENTIFYING THEMSELVES AS...			
	BLACK AND ONE OR MORE OTHER RACES	BLACK ONLY	DIFFERENCE	DIFFERENCE AS A PERCENTAGE OF THE TOTAL
ALL AGES	36,419,434	34,658,190	1,761,244	4.8%
17 AND YOUNGER	11,845,257	10,885,696	959,561	8.1%
18 TO 29	6,656,205	6,353,405	302,800	4.6
30 TO 49	10,753,666	10,420,572	333,094	3.1
50 AND OLDER	7,164,306	6,998,517	165,789	2.3

Source: Census Bureau

Describe the table and its implications.
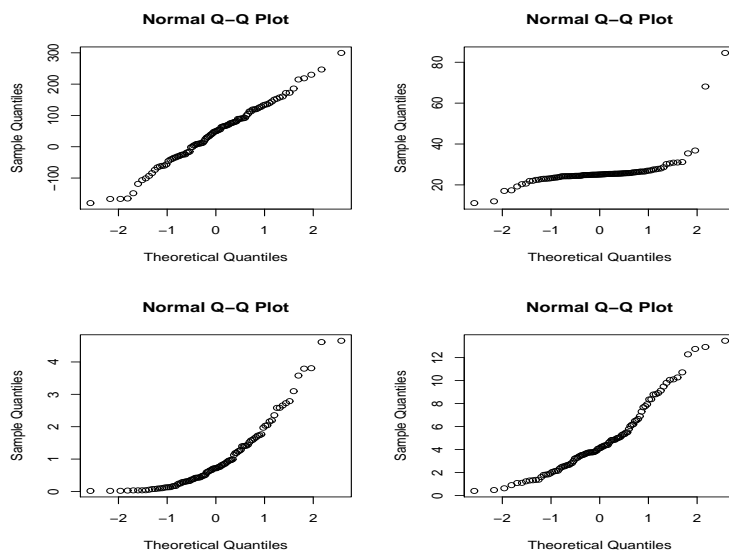- Estimate the value of r for each of the 4 diagrams
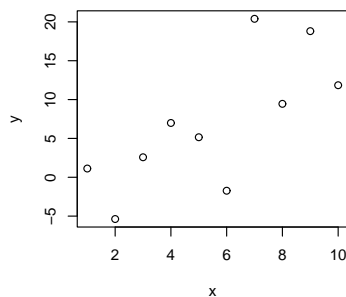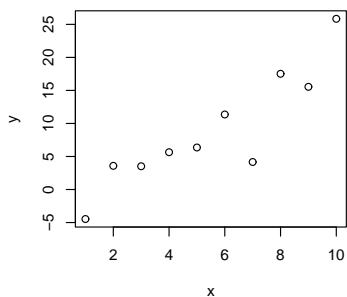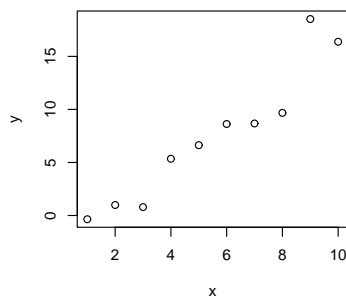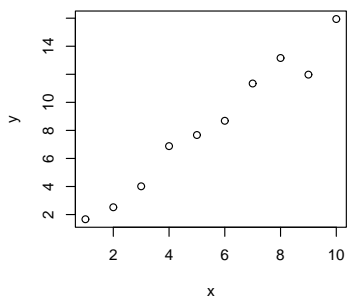
- Here are 2 residual plots. Which one indicates a linear relationship? Why
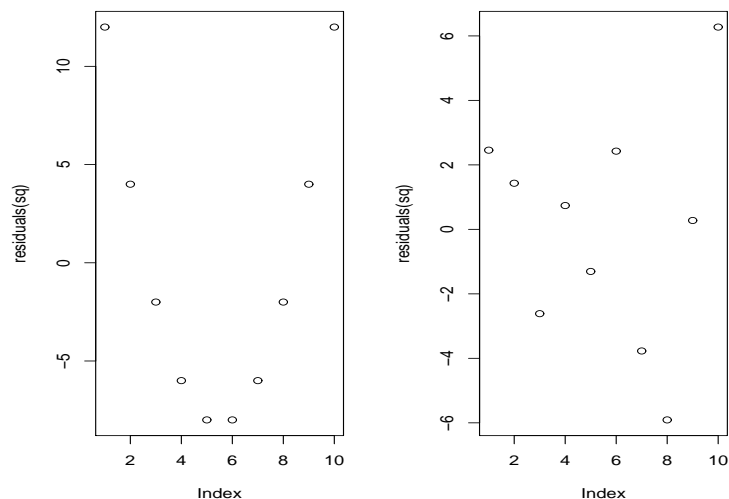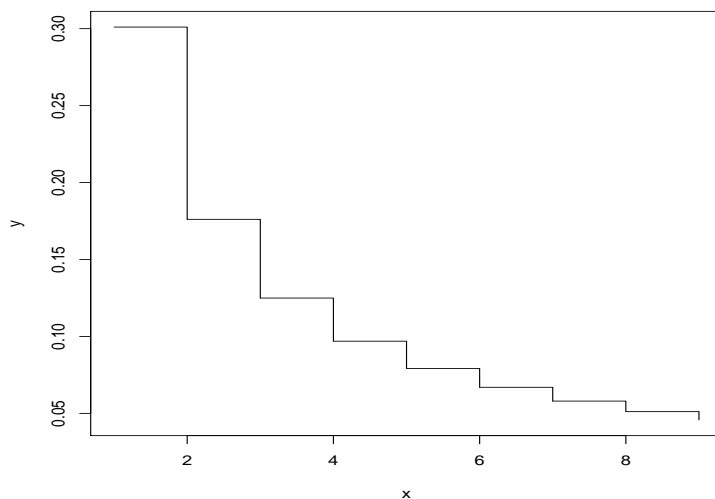
Chapter 4 From the Book 4.131, 4.133, 4.136, 4.138, 4.145, 4.153

    Others   1. The following are normal plots. Which data sets look approximately normal?

    2. Suppose X is a random variable with values 1, 2, 3... or 9. And we know $P(X = k) = \log(k + 1) - \log(k)$ base 10. What is the most likely value? What is the probability that $X > 5$, What is the mean value?

3. Describe the difference between mutually exclusive and independent.

4. A common phrasing in probability is *"the random variable are independent and have a common distribution."* Describe exactly what is meant by this, and try to think up an example.