1. This histogram represents the prices for 22 VCRs. Nine of these prices fall between \$240 and \$360. The approximate percentage is $\frac{9}{22} = .40909 \ldots\ldots \approx 41\%$.

2. I. True

   II. True

   III. False. The margin of error tells us that the percentage of adults who hold this opinion is between 52% (56% - 4%) and 60% (56% + 4%).

3. The difference is most likely due to bias due to the use of a convenience sample.

4. I. True

   II. False. Statiscally significant means that an observed effect is so large that it is unlikely to occur "just by chance" in the absence of a real effect in the population from which the data were drawn.

   III. False. An observational study is a study that observes individuals and measures variables of interest but does not attempt to influence the responses.

5. The population is all bags of chips produced by the company.

6. The correlation coefficient is so small that the regression equation will not be a very good predictor of Y.

7. The first five labels from row 105 are 02, 10, 25, 23, 30. In numerical order, these five numbers are 02, 10, 23, 25, 30.

8. The histogram is skewed to the left.

9. There are 29 pieces of data. The position of the median is $\frac{n+1}{2} = \frac{29+1}{2} = 15$.

The median is 48. The position of Q_1 and of Q_3 is $\frac{14+1}{2} = 7.5$.

$Q_1 = \frac{30+34}{2} = 32$ $\quad$ $Q_1 = \frac{53+59}{2} = 56$

The low value is 16; the high value is 69.

10. Find the class mark for each class of data: 49.5, 149.5, 249.5, 349.5, 449.5, 549.5, 649.5.

Enter the class marks in L_1 and the number of students in L_2.

Choose 1 – Var Stats L_1, L_2 from the CALC menu.

$\bar{x} = 379.5$
$s = 200.8$

11. Enter x-values in L_1 and y-values in L_2.
Chose Lin Reg $(ax + b)$ L_1, L_2 from the CALC menu.
a = 17.34548562
b = −323.0327542
This equation is $y = 17.35x - 323.03$, correct to two decimal places.

12. $y = 17.35x - 323.03$

$y = 17.35(35) - 323.03$

$y = 284.22$

$y = 284$ thousand cubic inches

Name: Key **Section:**_____

Instructor:_____

The following questions are free response. Please show all work in order to receive credit.

13. (12 pts.) Match the following terms with their definitions.

Voluntary response sample i

Margin of error e

Double blind experiment d

Bias a

Control group b

Placebo effect k

a. A systematic error that tends to cause observations to deviate in the same direction from the truth about the population whenever a sample or experiment is repeated.

b. A group of experimental subjects who are given a standard treatment or no treatment.

c. A sample that consists of the individuals who are most easily available.

d. An experiment in which neither the experimental subjects nor the persons who interact with them know which treatment each subject received.

e. How close to the truth about the population the sample result would fall in 95% of all samples drawn by the method used to draw this one sample.

f. An experiment to compare two or more treatments in which subjects are assigned to treatments by chance.

g. A sample chosen by chance, so that every possible sample of the same size has an equal chance to be the one selected.

h. An observed effect so large that it is unlikely to occur "just by chance" in the absence of a real effect in the population from which the data were drawn.

i. A sample that chooses itself by responding to a general invitation to write or call with their opinion.

j. The effects of two variables on the outcome of a study cannot be distinguished from one another.

k. The effect of a dummy treatment on the response of subjects.

14.

Team	HRs
Arizona	208
Boston	198
Chicago (AL)	214
Chicago (NL)	194
Cleveland	212
Colorado	213
Houston	208
Los Angeles	206
Milwaukee	209
New York (AL)	203
Oakland	199
San Francisco	235
St. Louis	199
Texas	246
Toronto	195

Team	HRs
Anaheim	158
Atlanta	174
Baltimore	136
Cincinnati	176
Detroit	139
Florida	166
Kansas City	152
Minnesota	164
Montreal	131
New York (NL)	147
Philadelphia	164
Pittsburgh	161
San Diego	161
Seattle	169
Tampa	121

The data above is the home run totals for all the major league baseball teams during 2001.

a. Make a frequency table of the data. (6 pts) Use 7 classes.

$L = 121$

$H = 246$

range $= H - L = 246 - 121 = 125$

Class width $= \frac{\text{range}}{\text{number of classes}} = \frac{125}{7}$

$= 17.86 \approx 20$

120 – 139	1111	4
140 – 159	111	3
160 – 179	𝍸 111	8
180 – 199	𝍸	5
200 – 219	𝍸 111	8
220 – 239	1	1
240 – 259	1	1

This is one possible solution.

Frequency Distribution for Team Home Run Totals

14b.

Stems	Leaves
12	1
13	6 9 1
14	7
15	8 2
16	6 4 4 1 1 9
17	4 6
18	
19	8 4 9 9 5
20	8 8 6 9 3
21	4 2 3
22	
23	5
24	6

Stems	Leaves
12	1
13	1 6 9
14	7
15	2 8
16	1 1 4 4 6 9
17	4 6
18	
19	4 5 8 9 9
20	3 6 8 8 9
21	2 3 4
22	
23	5
24	6

14 c.

position of median $= \frac{n+1}{2} = \frac{30+1}{2} = 15.5$

$$M = \frac{176+194}{2} = 185$$

position of Q_1 and $Q_3 = \frac{n+1}{2} = \frac{15+1}{2} = 8$

$$Q_1 = 161$$

$$Q_3 = 208$$

14b. Draw a stemplot of the data. (6 pts)

14c. Draw a boxplot of the data. (8 pts)

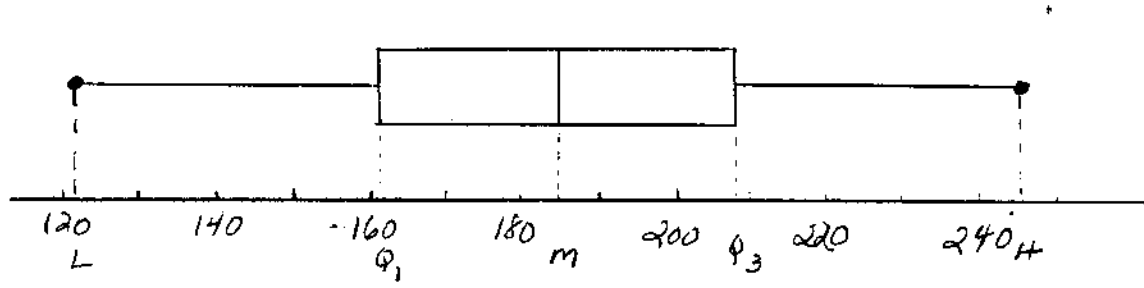
$L = 121$

$Q_1 = 161$

$M = 185$

$Q_3 = 208$

$H = 246$



15. (8 pts.) Fizz laboratories, a pharmaceutical company, has hired you to design an experiment to test the effectiveness of a new pain-relief medication. You have decided that the experiment should involve 210 patients. Outline the design of an experiment to compare the drug's effectiveness with that of aspirin and a placebo.