AP Statistics – Chapter 1 Free Response Practice Test

1. The test grades for a certain class were entered into a Minitab worksheet, and then "Descriptive Statistics" were requested. The results were

   ```
   MTB > Describe 'Grades'.

                  N      MEAN     MEDIAN   TRMEAN    STDEV   SEMEAN
   Grades         28     74.71    76.00    75.50     12.61    2.38

                  MIN    MAX      Q1       Q3
   Grades         35.00  94.00    68.00    84.00
   ```

   (a) Determine the IQR for this data.

   (b) Using the answer from part (a), determine whether the lowest and highest values in the data are outliers.

2. The following data represent scores of 50 students on a calculus test.

72	72	93	70	59	78	74	65	73	80
57	67	72	57	83	76	74	56	68	67
74	76	79	72	61	72	73	76	67	49
71	53	67	65	99	83	69	61	72	68
65	51	75	68	75	66	77	61	64	74

   (a) Construct a *frequency* histogram for this data set.

   (b) Describe the shape, center, and spread of the distribution of test scores.

3. During the early part of the 1994 baseball season, many sports fans and baseball players noticed that the number of home runs being hit seemed to be unusually large. Here are the data on the number of home runs hit by American and National League teams:

   ```
   American League   35, 40, 43, 49, 51, 54, 57, 58, 58, 64, 68, 68, 75, 77
   National League   29, 31, 42, 46, 47, 48, 48, 53, 55, 55, 55, 63, 63, 67
   ```

   (a) Construct a back-to-back stemplot to compare the number of home runs hit in the two leagues.

   (b) Write a few sentences comparing the distributions of home runs in the two leagues. Be sure to include a comparison of the medians as part of your discussion.

AP Statistics – Chapter 1 Free Response Practice Test – ANSWERS

1. Data: <u>Minitab printout of summary statistics for 28 test scores</u>

   a) $IQR = Q_3 - Q_1 = 84 - 68 = 16$

   b) <u>Low</u> Outlier: $Q_1 - 1.5 * IQR = 68 - 1.5 * 16 = 68 - 24 = 44$. Since the lowest value (35) is less than 44, it is an outlier.

   <u>High</u> Outlier: $Q_3 + 1.5 * IQR = 84 + 1.5 * 16 = 84 + 24 = 108$. Since the highest value (94) is not greater than 108, it is <u>not</u> an outlier.

2. Data: <u>50 Calculus test scores</u>

   a) Using class/bar widths of 5, we get:

   It would also be OK to use class widths of 10, but bars will be fewer and higher.
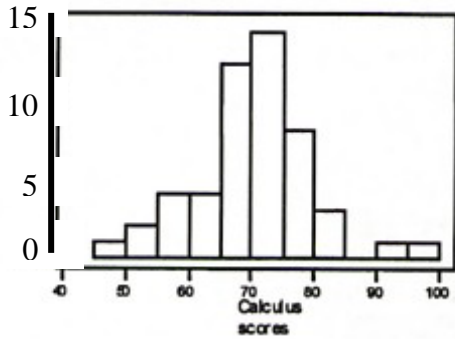
   b) Description of Data

   SHAPE – Roughly symmetric,

   CENTER – about 73

   SPREAD – 45 to 100

3. Data: <u>Homeruns hit in 1994 AL vs NL</u>

   a)   American League (AL)   National League (NL)

AL		NL
	2	9
5	3	1
930	4	26788
88741	5	3555
884	6	337
75	7	

   b) Overall, the American League teams hit more home runs than National League teams in 1994. To illustrate this, the median for the AL was 57.5 while the median for the NL was only 50.5. Additionally, the low value for the NL is much lower than in the AL (29 versus 35) and the high value in the AL is much higher than that in the NL (77 versus 67).