

Key Homework 1.3 Part A Pages 70 - 72

Problems 81, 83, 88, 89, 91, 95

81) (a) Putting the scores in order: 74 75 76 78 80 82 84 86 87 90 91 93 96 98. Since there are 14 scores, the median is the mean of the 7th and 8th scores. Therefore the median is About half of the scores are lower than 85 and about half are larger than 85. (b) If Joey had a 0 for the 15th quiz then the sum of his quiz scores would still be 1190 leading to a mean of To find the median, we add the 0 to the beginning of the list in part (a). Since there are now 15 measurements, the median would be the 8th measurement which is 84. Notice that the median did not change much but the mean did. This shows that the mean is not resistant to outliers, but the median is. $848685.2 \div 119079.3315 =$

1.82 (a) Putting the weights in order: 285 303

83) The mean is \$60,954 and the median is \$48,097. The distribution of salaries is likely to be quite right skewed because of a few people who have a very large income. When a distribution is skewed to the right, the mean is bigger since the tail values pull the mean toward them.

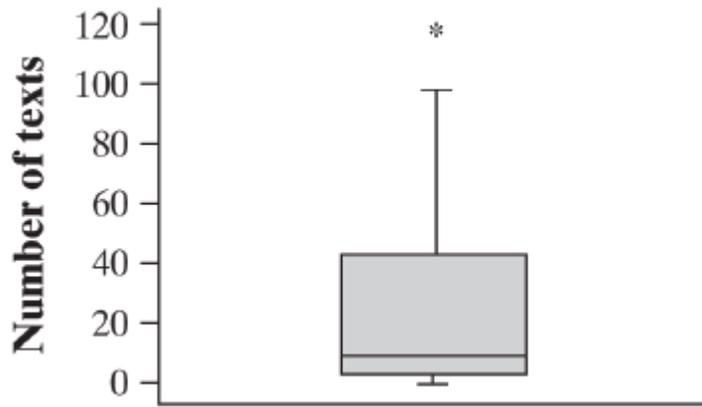
88) (a) Estimate the frequencies of the bars (from left to right): 15, 11, 15, 11, 8, 5, 3, 3, 3 (although answers may vary slightly, the frequencies must sum to 74). We estimate the median by finding the average of the 37th and 38th values. The median is found to be 2. The first quartile is the median of the lower 37 observations. This means that it is the value of the 19th observation. This is found to be 1. The third quartile is the median of the upper 37 observations, which means that it is the value of the 56th observation. This is found to be 4.

(b) Using these values, we can estimate the mean by adding 0 fifteen times, 1 eleven times, ..., and 8 three times. This is equivalent to multiplying the value of each bar (0 through 8) by its frequency or height. This gives us a sum of 194. The mean is then estimated by dividing by the number of responses: $194/74 = 2.62$

89) (a) Putting the data in order we get: 74 75 76 78 80 82 84 86 87 90 91 93 96 98. There are 14 observations here so the first quartile is the median of the bottom 7 observations. This means that it is the value of the 4th observation. We find it to be 78. The third quartile is the median of the top 7 observations, so it is the value of the 11th observation. We find it to be 91. So The middle 50% of the data have a spread of 13 points.

(b) Any outliers are below $Q1 - IQR(1.5)$ or above $Q3 + IQR(1.5)$ These are computed to be 58.5 and 110.5. There are no points outside of these bounds, so there are no outliers.

91) a)



b) The article claims that teens send 1742 texts a month. This works out to be about 58 texts a day (assuming a 30 day month). That seems pretty high given this data set. Twenty-one of the 25 students sent fewer than that, in fact, half of the students sent less than 10 messages (about 1/6th of the amount claimed in the article).